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Testing A Brief Directive Intervention To Reduce Symptoms Associated With Trauma

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TESTING A BRIEF DIRECTIVE INTERVENTION TO REDUCE SYMPTOMS ASSOCIATED WITH TRAUMA

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ABSTRACT

A randomized controlled trial was conducted to test the relative efficacy of a brief directive protocol (DP) aimed at reducing posttraumatic stress disorder (PTSD) symptoms and an expressive writing protocol (EW), which has more than a 30-year history (Pennebaker & Chung, 2011) of research showing mostly positive effects. The DP included components with research support from studies of expressive writing, prolonged exposure, cognitive processing therapy, and mindfulness-based therapies.

Participants were primarily undergraduate students at a large public university in the southern United States who endorsed at least one traumatic experience and who manifested a minimal level of PTSD symptoms. The primary outcome measure was the Modified PTSD Symptom Scale-Self Report (MPSS-SR; Falsetti, Resnick, Resick, & Kilpatrick, 1993) with a primary endpoint of 14-days post-treatment and 30-day follow-up for maintenance of symptom reductions.

Multilevel mixed effects modeling was used to analyze results. Both treatment conditions showed statistically and clinically significant reductions in PTSD symptoms, with more robust effects associated with the DP condition. Additional analyses showed comparable significant reductions in physical illness symptoms between conditions, and significantly larger reductions of depressive symptoms by the DP condition. The DP condition was also significantly better at reducing thought suppression and rumination, and at increasing cognitive acceptance of the trauma. DP also showed significant reduction in alexithymia, which was not shown by EW.

Assessment of distress levels during the interventions suggest EW achieves reductions in PTSD symptoms through in-session habituation. For the DP condition, participants demonstrated in-session habituation to explicit emotion cues but not to the trauma itself; however, other evidence also suggests habituation. Recommendations are offered regarding use of these protocols and further study of effective components.

DEDICATION

This dissertation is dedicated to my wife, Julia L. Carrano, and son Gianmarco, without whose love and support I'd probably still be talking instead of doing. Also to my parents, who have never doubted my ability to achieve.

LIST OF ABBREVIATIONS AND SYMBOLS

α	Type I error probability
ACT	Acceptance and Commitment Therapy
ANOVA	Analysis of Variance
APA	American Psychiatric Association
β	Type II error probability
b	Unstandardized coefficient
BAI	Beck Anxiety Inventory
BDI	Beck Depression Inventory
CAIC	Bozgodan's Information Criterion
CAPS	Clinician Administered PTSD Scale
CI	Confidence Interval
CPOTS	Cognitive Processing of Trauma Scale
CPT	Cognitive Processing Therapy
CR	Cognitive Restructuring
DASS-21	Depression, Anxiety, and Stress Scale–21 Item Version
DBT	Dialectical Behavior Therapy
DDF	Difficulty Describing Feelings subscale of the TAS-20
DIF	Difficulty Identifying Feelings subscale of the TAS-20
DP	Directive Protocol
DSM-5	Diagnostic and Statistical Manual–5th Edition

DSM-IV-TR	Diagnostic and Statistical Manual–4th Edition–Text Revised
EM	Expectation Maximization
EO	External Orientation subscale of the TAS-20
ES	Effect Size
EW	Expressive Writing
GPA	Grade Point Average
IC	Information Criteria
IE	Imaginal Exposure
IRB	Institutional Review Board
ITT	Intent-to-Treat
LEC	Life Events Checklist
LIWC	Linguistic Inquiry and Word Count
LR	Likelihood Ratio
M	Mean
*M*Δ	Change in Mean
MAR	Missing at Random
MCAR	Missing Completely at Random
MLE	Maximum Likelihood Estimation
MNAR	Missing Not completely at Random
MPSS-SR	Modified PTSD Symptoms Scale-Self Report
MVA	Missing Values Analysis
N, n	Total sample size, number of participants per group
PCL-S	PTSD Checklist–Stressor Specific Version

PE	Prolonged Exposure
PILL	Pennebaker Inventory of Limbic Languidness
PTSD	Posttraumatic Stress Disorder
PTSD_TOTAL	MPSS-SR Total Score
XFM	Transformed variable (using square root transformation)
r	Pearson's product moment correlation
R	Coefficient of multiple correlation
R^2	Coefficient of determination
REBT	Rational Emotive Behavioral Therapy
RRS	Ruminative Response Scale
SCID	Structured Clinical Interview for DSM-IV
SD	Standard Deviation
SE	Standard Error
SELSA-S	Social and Emotional Loneliness Scale for Adults-Short Version
SES	Socioeconomic status
SPSS	Statistical Package for the Social Sciences
STAI-T	State-Trait Anxiety Inventory-Trait Version
SUDS	Subjective Units of Distress
TAS-20	Toronto Alexithymia Scale–20 Item Version
Tx	Treatment
UCLA	Revised UCLA Loneliness Scale
WBSI	White Bear Suppression Inventory
χ^2	Chi-Square test of significance

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INTRODUCTION

According to a recent review (Nemeroff, 2006), posttraumatic stress disorder (PTSD) affects 7.8% of the U.S. population, with women (10.4%) twice as likely as men (5.0%) to develop this disorder. For women, types of trauma most associated with PTSD are sexual molestation and rape, physical attacks, and being threatened with a weapon. Sexual molestation and rape each have a reported national prevalence of slightly higher than 10% of women. For men, molestation, rape, and combat exposure are most associated with PTSD, though prevalence of combat exposure is about 5.0% and male sexual abuse or assault is less than 3.0% (although there may be significant underreporting). Women are more than twice as likely as men to develop PTSD associated with accidents and witnessing traumatic events, and exponentially more likely to developing PTSD after being threatened with a weapon (35% vs. 2%) or physically assaulted (22% vs. 2%). However, men are three times more likely than women to witness traumatic events (35% vs. 12%) and to experience threats with a weapon (21% vs. 7%); and twice as likely to experience accidents (25% vs. 12%). All of these data suggest that a significant number of people in the U.S. probably experience symptoms of PTSD.

In addition to diagnosable PTSD, exposure to traumatic events, including those in early life, is associated with other disordered symptoms and behaviors. These include self-harm and suicidality, poor physical health, substance abuse, depressive and anxiety disorders, social/relational difficulties, and other forms of maladaptive avoidance behaviors and restricted life functioning (Nemeroff, 2006; Pennebaker, 1997). Thus, a significant percentage of the

population may be operating at impaired levels due to ignored or inadequately addressed trauma experiences.

Much progress has been made in the treatment of individuals who seek therapy for PTSD (see Schnurr, 2008 for reviews of numerous treatment studies). Prolonged Exposure (PE), as described and implemented by Foa and colleagues (1991), has a very strong evidence base. Likewise, Cognitive Processing Therapy (CPT), developed by Resick and colleagues (2008), has also repeatedly been associated with significant improvements in patient functioning. The latter includes several written exercises, which overlaps with a third line of research: expressive writing. Expressive writing protocols, tested as interventions to reduce the impact of trauma on physical and mental health, have been studied for nearly three decades and have shown numerous beneficial outcomes (Smyth & Pennebaker, 2008).

However, mixed findings, as described below, preclude the use of expressive writing as a reliable evidence-based treatment for trauma. Nevertheless, when expressive writing interventions have shown enduring beneficial outcomes, they have achieved these benefits with the entire intervention requiring as few as one to four writing sessions with durations of only two to twenty minutes each, and with negligible therapist training (Burton & King, 2008). Successful examples include use in an inpatient facility for substance use disorder patients with PTSD, which showed substantial reductions in PTSD symptoms, depression, and even social functioning (Bragdon & Lombardo, 2012). The accessibility and low patient burden of expressive writing stands in marked contrast to the 9-12 sessions of 60-90 minutes' duration each, plus daily homework exercises, practiced in PE and CPT protocols. The latter also require extensive therapist training in addition to ongoing client willingness and commitment. These demands and the likelihood of client dropout suggest a need for additional research on the

effective components of trauma therapies and testing of whether substantial results could be obtained with less client burden and minimal therapist training such as is found with expressive writing protocols.

For many combat veterans, sexual assault victims, and survivors of natural and man-made disasters, 9-12 weeks of treatment may seem a negligible 'cost' compared to the benefits of achieving functionality in life that has been severely restricted for long periods of time. Yet in many other situations, individuals may not be aware of the impact of past trauma on current problems and limitations, or their circumstances may make comprehensive treatment unlikely. Consider facilities such as inpatient crisis stabilization centers or hospitals where patients are briefly committed after a suicide attempt, other self-harm, or due to excessive substance abuse. Manualized multi-session therapies might be of little use in these environments due to the limited time clients spend in these environments, typically transferring to a longer-term inpatient facility or returning home after their symptoms are stabilized, typically with medications. Similarly, in facilities such as high schools and colleges, opportunities exist to identify trauma victims but the demands of current manualized therapies make their application unlikely. Thus, the abundant trauma exposure occurring in the U.S. and abroad, and its costly impact on academic and employment-related performance as well as overall social functioning, suggests a need for effective interventions which are brief in nature.

The purpose of this study is two-fold. First, it reviews the strengths and limitations of expressive writing studies and two highly researched trauma treatments (i.e., prolonged exposure and cognitive processing therapy) and identifies components which appear to be contributing to symptom reduction and improved functioning. Second, it introduces and tests a brief paper-and-

pencil protocol, based on several likely efficacious components, for the treatment of trauma-related symptoms.

Mixed Results of Expressive Writing Studies

Writing instructions. Expressive writing protocols generally consist of three or four writing sessions of 20 minutes' duration on consecutive days. The experimental condition generally has a variation of the following instructions (Pennebaker & Chung, 2011, p. 419):

> For the next three days, I would like you to write about your very deepest thoughts and feelings about the most traumatic experience of your entire life. In your writing, I'd like you to really let go and explore your very deepest emotions and thoughts. You might tie this trauma to your childhood, your relationships with others, including parents, lovers, friends, or relatives. You may also link this event to your past, your present or your future; or to who you have been, who you would like to be, or who you are now. You may write about the same general issues or experiences on all days of writing or on different topics each day. Not everyone has had a single trauma but all of us have had major conflicts or stressors – and you can write about these as well. All of your writing will be completely confidential. Don't worry about spelling, sentence structure, or grammar. The only rule is that once you begin writing, continue to do so until your time is up.

Control participants are typically asked to write about 'neutral topics' such as weekend plans or to describe places or objects such as their room or their shoes for the same amount of time and number of sessions (Baike & Wilhelm, 2004). Individual differences due to sex, age, anxiety, negative affectivity, and inhibition/constraint have been examined, but none have been found to be associated with better or worse outcomes in expressive writing studies (Epstein, Sloan, & Marx, 2005; Pennebaker, 1997).

Positive findings. A meta-analysis of 13 studies using non-clinical participants showed that the outcomes of expressive writing for healthy populations are positive, superior to controls, and on par with those obtained in more complex and time-consuming forms of therapy. Specific improvements were reported in health, general functioning, physiological functioning, and

psychological well-being (Smyth, 1998). More specifically, health outcomes have included reductions in blood pressure, stress-related doctor visits, and hospital stays; and improved functioning in the immune system, liver, and lungs. Psychologically, participants have reported improvements in affect and reductions in depressive symptoms and trauma-related intrusive thoughts and avoidance behaviors. Other benefits have included improvements in working memory, academic grades, sports performance, job attendance, and re-employment after unemployment (Pennebaker, 1997).

A meta-analysis by Frisina, Borod, and Lepore (2004) also found positive effects for expressive writing among clinical populations; they were superior to neutral writing conditions but benefits were not as robust as with non-clinical populations. Specifically, while patients under treatment for asthma, arthritis, and cancer showed statistically significant improvements in physical health; and small improvements on measures of depression, mood, anxiety, and sleep quality though they did not reach statistical significance. These findings suggests that individuals coping with chronic and potentially fatal diseases may derive physical benefits as well as modest psychological benefits from expressive writing. Of course, it may be that simply being part of a study generates benefits for trauma victims.

Positive effects regardless of writing condition. Comparable improvements under expressive and neutral writing conditions have been reported among women with body image concerns (Earnhardt et al., 2002); children of substance abusers (Gallant & Lafreniere, 2003); people giving care to chronically ill children (Schwartz & Drotar, 2004); suicidal students (Kovac & Range, 2002); people grieving the death of a loved one (Range et al., 2000; O'Connor et al., 2003); victims of attempted or completed rape (Kearns, Edwards, Calhoun, & Gidycz, 2010); and college students who met criteria for PTSD associated with sexual or physical assault,

a car accident, war experience, or witnessing a murder (Sloan, Marx, & Greenberg, 2011). These findings suggest that improvements among those writing about their trauma or about a neutral topic may be due to factors such as repeated self-identification as the victim of a trauma and completion of numerous related assessment instruments before and after the writing exercises. However, not all studies have shown positive effects.

Detrimental effects. Detrimental effects of expressive writing have been reported in four studies. Participants included eight traffic accident survivors diagnosed with PTSD who showed increases in healthcare visits and physical and psychological symptoms (Gidron, Peri, Connonlly, & Shalev, 1996); 32 adult survivors of childhood sexual abuse who showed increases in physical symptoms (Batten, Follette, Hall, & Palm, 2002); three college students who showed significant increases in medical visits (Honos-Webb, Harrick, Stiles, & Park, 2000); and college students who showed increases in psychological distress and health center visits (Rogers, Wilson, Gohm, & Merwin, 2007). These results are difficult to interpret. For example, in the Gidron et al. and the Rogers et al. studies, victims may have been avoiding needed treatment and the increase in hospital visits may have been a positive outcome of participation in the study. Yet these consequences may be indicative of behaviors these participants engaged in that were unhelpful. The overall lack of direction provided by the writing instructions may be allowing for unhelpful behaviors such as rumination, which will be discussed below. In addition, some differences have been found based on populations sampled.

Population differences. According to Frisina et al. (2004), psychiatric patients show less benefit from expressive writing than do physically ill patients. This finding may be due to uncontrolled confounds with medications and other forms of therapy that may be administered concurrently in psychiatric samples. It may also suggest that expressive writing is simply less

effective for those with severe psychological conditions. Similarly, a meta-analysis of 30 studies (Harris, 2006) found that while writing about stressful experiences helped *healthy* individuals to reduce healthcare utilization, it did not show the same benefit for those with either medical or psychological diagnoses. Thus, expressive writing as it is currently implemented may work best with generally healthy people, and lead to greater reduction of physical rather than psychological symptoms, but such a conclusion is still premature.

Practices Associated with Successful Expressive Writing Outcomes

Given the record of mixed findings, it remains largely unclear whether and when to advise clients to explore their trauma histories via writing or journaling. However, expressive writing researchers have found support for several factors that may help explain aspects of expressive writing that contribute to positive outcomes.

Making conscious associations between the events of the trauma and one's emotions contributes to symptom improvement. A seminal study by Pennebaker and Beall (1986) showed that for victims of trauma, writing about emotions alone was inferior to writing about emotions plus the actual events related to a trauma. Similarly, in a study that isolated 'narrative coherence' as a condition, Graybeal, Sexton, and Pennebaker (2002) found that, by itself, coherence alone about one's trauma story was not associated with better health outcomes.

Further debate about emotional and cognitive factors led Sloan, Marx, Epstein, and Lexington (2007) to include details of the events but to compare groups based on emotional expression ("write about the most traumatic experience [of your life] with as much emotion and feeling as possible") versus insight and cognitive assimilation ("focus on what the event has meant" and "how the event has changed [your life]"). They found that only the emotional expression condition showed significant improvements in psychological and physical health as

compared to the insight and traditional control groups. Thus, emotional expression linked to a particular trauma does appear to contribute to positive effects.

Actual expression of trauma narratives is more important than the format of expression. Pennebaker's review (1997) found that improvements in physical, behavioral, and psychological markers associated with writing were not superior to talking aloud, and that improvements associated with talking to a therapist or a tape recorder about a trauma were comparable to those associated with writing about it. The important factor appears to be the expression of a traumatic event, not the form of that expression.

More recently, Resick and colleagues (2008) conducted a dismantling study which isolated the writing tasks from the rest of Cognitive Processing Therapy (CPT). Participants were women with a history of physical and/or sexual assault in childhood or adulthood who met criteria for PTSD. Results showed that all three conditions (writing alone, CPT without writing, and full CPT) achieved substantial but comparable improvements in PTSD and depression symptoms. One particularly unexpected finding was that CPT without the writing component achieved the best results in terms of PTSD and depressive symptom reduction, suggesting that the addition of writing adds nothing to the success of that protocol on PTSD. However, it should be noted that all three conditions involved psychoeducation and 12 hours of active interaction with a therapist and all showed significant symptom improvement during the course of therapy and results were comparable at 6-month follow-up. These findings suggest that creating a narrative is not the effective component; rather, processes that occur during each of these treatment conditions may be responsible for symptom improvement.

Symptom reduction is associated with habituation. In his earliest expressive writing study, Pennebaker (1984) based his theory on reports in the 1960s and 1970s that individuals

classified as a ‘repressor’ or ‘nonconfider’ of thoughts and feelings showed higher blood pressure, greater rates of physical disease, and higher cancer mortality rates than confiders or non-repressors (Blackburn, 1965; Davies, 1970; Derogatis, Abeloff, & Mehsaratos, 1979; Kissen, 1966). However, exposure alone, or overcoming inhibition, does not appear to account for improvements. Greenberg and Stone (1992) found no difference in beneficial outcomes between those who wrote about an undisclosed trauma and those who wrote about one they had already disclosed to others, suggesting that the ‘removal of inhibition’ and achieving expression is not sufficient for improved functioning.

Looking specifically at habituation in expressive writing, Sloan, Marx, and Epstein (2005) measured heart rate reactivity during writing sessions. They found that participants who wrote about the same topic across three sessions showed steady decreases in arousal levels, as well as improvements in physical and psychological symptoms. This was in contrast to participants who wrote about a different trauma each time, and those who wrote about neutral topics. Those who wrote about a different trauma each time showed higher arousals during sessions two and three, suggesting lack of habituation; they also showed less reduction in symptoms. This Sloan et al. study offers what may be the best evidence for an association between beneficial outcomes and exposure-that-achieves-habituation. It may be the case that the expressive writing studies which showed detrimental outcomes did so because of exposure that led to a reinforcement of avoidance rather than achieve habituation. If that were the case, then improving client attitudes toward their traumatic memories (i.e., willingness to experience rather than avoid them) may be a helpful target for effective interventions.

The Sloan et al. (2005) finding is consistent with the outcomes of prolonged exposure protocols described by Foa, Rothbaum, Riggs, and Murdock (1991), and with the evidence-based

treatment of numerous anxiety disorders. In these treatments, exposure is always administered under conditions such that maladaptive avoidance or escape are prevented in order to avoid negative reinforcement of those behaviors and to achieve reductions in the arousal elicited by the presence of that stimulus. Treatments often begin with more tolerable stimuli first and subsequent sessions introduce increasingly fear-arousing stimuli from a list arranged along a hierarchy until habituation is achieved at each stage (Barlow, 2008).

Of course, in writing studies, habituation to trauma memories and cues may not necessarily be occurring only during the writing sessions but may be occurring between sessions or simply during the time a participant is engaged in a trauma-related study. Sloan et al. (2011) found no differences between participants assigned to write about a trauma with as much emotion as possible and controls who were told to describe their typical day with no emotion or opinions. Participants in both conditions showed significant improvements in PTSD symptoms. Similarly, other studies (Earnhardt et al., 2002; Gallant & Lafreniere, 2003; Kearns et al., 2010; Kovac & Range, 2002; O'Connor et al., 2003; Range et al., 2000; Schwartz & Drotar, 2004) have shown comparable beneficial results between experimental and control participants. Symptom amelioration may be due to testing effects whereby the completion of numerous pre- and post-assessments in the context of self-identifying as a trauma survivor may be serving as exposure to trauma memories in a safe setting and thereby facilitating habituation.

Health improvements are usually associated with increasingly coherent, insightful, and balanced narratives across sessions. Pennebaker and colleagues (1993, 1997, 2001) have shown that those who benefit from expressive writing show a shift from negativity and confusion to positivity and insight in their writing across sessions. To assess these changes Pennebaker and colleagues developed text analysis software called Linguistic Inquiry and Word Count (LIWC;

Pennebaker & Francis, 1999). The LIWC program categorizes thousands of words into 82 categories such as negative emotion, positive emotion, causation, and insight. They found that for participants who improve, later sessions show three patterns: increasing use of causal and insight words (e.g., *because*, *reason*, *understand*, and *realize*); an overall higher use of positive emotion words; and a moderate overall use of negative emotion words. Extremes of very many or very few negative emotion words are both associated with worse outcomes.

Building on those findings, Burton and King (2004, 2008, 2009) and Smyth and Pennebaker (2008) have further demonstrated that writing about the positive gains following a traumatic experience is associated with beneficial effects, and other researchers have eliminated negative writing entirely. Ashley, O'Connor, and Jones (2010) showed that writing about positive themes benefitted caretakers of the chronically ill, while those who wrote about negative themes did not improve. This suggests that identifying positive aspects of traumatic experiences assists with reducing the subsequent impact of those events.

However, two exceptions to these findings have been reported. Batten et al. (2002) found that increases in insight, causation, and positive emotion words were associated with worse symptomatology at follow-up, and that number of negative emotion words was not significantly related to outcomes. Likewise, Rogers et al. (2007) found that increases in insight were associated with more health center visits and psychological distress. This may serve to caution researchers and therapists that exposure alone is not sufficient if it fails to achieve habituation. However, it should also be noted that number of visits to a health care facility may be indicative of addressing a problem rather than further ignoring or avoiding it, suggesting it as a marker of a positive outcome. Regardless, it appears that insight and a shift from negative to positive expression may be beneficial but are insufficient to achieve positive outcomes.

Understanding Processes Associated with PE and CPT

Common factors in PE and CPT. Thus far, the above findings regarding beneficial expressive writing treatments could be said to support processes that occur through Prolonged Exposure (PE; Foa et al., 2005) and Cognitive Processing Therapy (CPT; Resick et al., 2008; see Rothbaum & Foa, 1999 and Schnurr, 2008 for excellent summaries of numerous treatment studies). During successful administrations of PE and CPT, clients are helped to express and re-experience their stories and related emotions; they experience emotional arousal and dissipation or habituation to negative emotions; and their stories become less fragmented and more coherent.

Given these commonalities of effective trauma treatments, one reason expressive writing studies show inconsistent results may be due to failure of participants to experience actual or imaginal exposure since there is no therapist to prompt and direct them toward these experiences after the initial instructions. In PE and CPT, trauma victims are repeatedly prompted to describe their perceptual experiences as they recall or write about scenes of their trauma (with instructions to use the present tense), and they are frequently prompted to feel their feelings (Lauterbach & Reiland, 2007). Absence of such prompting may result in omission and avoidance of these experiences for some participants of expressive writing studies, while others may be experiencing them and achieving the positive results.

Re-experiencing or recalling the details of a trauma may be important for at least two reasons. First, these activities may serve to cue further recollections and help make the experience more clear and comprehensive. By instructing the client to describe what they see, hear, or smell, they may begin to notice other things previously omitted and fill gaps in their memories. Second, perceptual details may consciously or unconsciously serve as triggers for flashbacks and sudden mood changes. Unconscious cues can include a particular smell, the flash

of a steel bumper, a loud sound, and many other sensory perceptions that have become associated with the event. Recalling them repeatedly can initiate the process of habituation. In PE, victims are also prompted to list feared and avoided activities and situations so they can be targeted for exposure exercises. The process of identifying cues and avoided activities also begins the work of exposure, which may not occur with the largely undirected expressive writing protocol.

Divergence between PE and CPT. In addition to those largely common elements, debate between PE and CPT researchers focuses on whether, in the treatment of PTSD, there is any need for 'cognitive restructuring' (CR), a term used to describe the explicit targeting of catastrophic and unrealistic interpretations and 'meanings' of traumatic experiences and predictions related to future well-being (Bryant et al., 2003). PE as delivered by Foa and colleagues ignores the content of cognitions, while CPT specifically identifies and addresses the contents of thoughts.

During CPT, participant cognitions are identified, challenged, and altered numerous times, orally as well as in writing. After an introductory psychoeducation session about the treatment, which includes a discussion of the relationship between situations, thoughts, and feelings, and the advisability of allowing natural feelings to occur rather than be suppressed or avoided, clients are asked to write a sentence about what their traumatic event 'means' to them. During the subsequent two sessions, this statement is challenged and used to illustrate the relationships between events, thoughts, and emotions. The client is then asked to write a narrative at home, in the present tense, allowing themselves to re-experience the emotions. They are to read this account aloud daily until the next session, and then read it to their therapist. Using Socratic questions, the therapist demonstrates the CR skill of identifying and challenging

cognitive distortions such as unreasonable self-blame. The client then goes home and revises the account and more Socratic questioning helps them to achieve reductions in PTSD and other symptoms. Furthermore, throughout the sessions, victims are taught to identify thinking errors such as overestimation of danger, and are taught to challenge their cognitions and develop more balanced ones, without any explicitly named 'exposure' exercises or homework (Resick et al., 2008). Cognitive restructuring is the central component of CPT, and CPT has been shown to effectively reduce PTSD symptoms and depression (Schnurr, 2008).

Several dismantling studies have attempted to resolve this debate. Foa and colleagues (2003, 2005) have repeatedly suggested there is no need for CR in treating PTSD as evidenced by robust efficacious and effective outcomes with PE. However, Bryant et al. (2003) compared the use of imaginal exposure (IE) alone with the addition of CR to it (i.e., IE/CR). This required removing potentially cognitive strategies from PE to achieve an IE treatment without CR. They found that the combined condition of IE/CR was more effective than IE alone. Both conditions were also more effective than supportive counseling alone, adding support to the belief that exposure-with-habituation is the critical component rather than simple therapeutic attention.

Subsequently, Foa et al. (2005) added a CR component to prolonged exposure and reported that it added nothing to the successful effects of PE alone. However, two differences in methodology may account for these contradictory findings. First, a confound exists in the nature and amount of psychoeducation and guidance provided by Foa and colleagues. Unlike strict behavioral trials, the first two or three sessions in PE involve discussion of reactions to trauma, the purpose and types of exposure, and the developing of fear hierarchies for *in vivo* exposures. These discussions undoubtedly serve a cognitive purpose; at a minimum the act of developing an

exposure hierarchy list elicits cognitive re-appraisal of feared stimuli (i.e., as less threatening and more approachable).

Second, the Foa et al. treatment conditions included *in vivo* as well as imaginal exposure as homework. The inclusion of *in vivo* exposure ignores a confound explicitly cited and controlled for by Bryant et al. (2003), namely that *in vivo* exposure in home assignments often includes the patient using cognitive coping skills such as self-talk. Thus, it appears undeniable that PE involves a certain degree of CR, albeit not proposed to clients as an explicit strategy or with a set of cognitive skills to be acquired.

Additional Contributions of Expressive Writing Studies to Understanding Trauma Treatment

While current expressive writing protocols may not offer dependable PTSD treatment (although this is challenged by results from Bragdon and Lombardo, 2012), the wealth of expressive writing studies offer several contributions to the area of trauma treatment that exceed the research and evidence provided by PE and CPT studies.

Trauma treatment may not require multiple long sessions or continuity across months. Given that habituation occurs over time and is measured by changes in arousal across trials, it has been theorized that the success of PE and CPT is due, at least in part, to these treatments being time-intensive. Both involve 9-12 sessions of 60-90 minutes' duration as well as the completion of assignments at home. In contrast, expressive writing studies have demonstrated success with administrations as brief as one session and rarely more than four sessions, with session durations rarely longer than 20 minutes, and usually on consecutive days (i.e., within a single week), with no follow-up other than symptom and attitude assessment.

Some researchers have suggested that this brevity is potentially harmful to participants. Specifically, three studies with detrimental results have led researchers to conclude that

expressive writing should not be used in treating PTSD (Gidron et al., 1996), should only used with the expectation that some participants will need supportive therapy afterwards (Honos-Webb at al., 2000), and that more time is required for habituation to occur (Batten et al., 2002). In support of the latter, Pennebaker's (1997) review found that including more days and spacing them apart was superior to writing more often in fewer days; and that length of writing sessions did not significantly alter outcomes. Similarly, Frattaroli's (2006) meta-analysis found that protocols with at least three sessions were more effective than those with fewer than three sessions; and that protocols involving sessions longer than 15 minutes were more effective than those lasting less than 15 minutes, suggesting that longer exposure is better.

In contrast with findings that more and longer writing sessions produces better results, subsequent studies have found enduring positive physical health effects associated with writing three times within a single hour (Chung & Pennebaker, 2008); writing for only two minutes on two days (Burton & King, 2008); and from a single writing session (Greenberg et al., 1996). Burton and King (2008) speculate that brief writing sessions may be enough to initiate the Zeigarnik effect, allowing processing that has been avoided until then.

Zeigarnik (1938) found that memory for incomplete or interrupted tasks is more intrusive than for completed tasks, meaning that the mind will continue to process information that is incomplete. It may be the case that trauma memories lose their intrusiveness when engaged and fully explored (i.e., when their processing is completed) as opposed to when reminders trigger avoidance and efforts to distract oneself. Thus, it may be sufficient for therapists and researchers to train clients to have skills which allow healthy engagement with disturbing memories rather than repeatedly participate in the client's processing of their trauma. Given the evidence

regarding brevity of intervention, it appears that *how* time is used may be more important than mere *quantity* of time spent on the formal intervention.

Clients may benefit by eliminating a delay between informed consent and start of exposure. A potential argument against brief exposure protocols stems from a belief that clients need 'time' to understand the proposed intervention, grant their informed consent, and consider treatment alternatives. Giving clients 'time' is generally interpreted to mean that actual treatment must wait until one or more initial informational sessions have occurred. This makes it likely that trauma treatment will be omitted in settings in which clients may not return, despite their having been identified as suffering from PTSD symptoms. It also provides an opportunity for increased avoidance, and reinforcement of that avoidance, which is not in the best interest of the client. In contrast, the immediate provision of exposure experiences may facilitate recovery and demonstrate the potential effectiveness of the treatment. Regardless of one's beliefs and speculations, 30 years of expressive writing studies offer evidence of the willingness of participants to arrive at a study site and engage their worst trauma memories after only a brief introduction and consent process. This normalization of engagement with such memories is consistent with exposure theory and practice (Barlow, 2008) but delay and treating victims as excessively fragile may reinforce maladaptive cognitions regarding trauma and danger cues.

Eliciting emotional arousal can be achieved quickly, particularly with therapist warmth. It might seem that brevity of intervention sessions could obstruct achieving the high emotional arousal necessary for habituation to occur. However, studies by Pennebaker and colleagues (1986, 2002) and Sloan and colleagues (2005, 2008, 2011) suggest that participants do not require previous in-person contact with researchers in order to reach elevated arousal in the first and subsequent sessions. Researcher warmth specifically has been shown to promote emotional

engagement. Rogers et al. (2007) found that participants who interacted with a "warm" researcher showed significantly more emotional engagement and greater insight than those who interacted with a "cold, distant" researcher. In fact, those who interacted with a cold experimenter showed no significant increases in insight, nor significant changes in symptoms or healthcare visits, suggesting that researcher coldness may block the emotional engagement that appears to be necessary for arousal and habituation to occur.

Detrimental effects of expressive writing may be more attributable to maladaptive cognitions and behaviors than to brevity of intervention time. When Gidron et al. (1996) found that their eight experimental participants showed increases in negative affect, healthcare visits, and avoidance symptoms, they explicitly recommended that expressive writing not be used to treat PTSD (note: participants were primarily survivors of traffic accidents). However, the authors included the caveat that training participants in coping skills might have improved their results and they did not cite lack of time as a problem. Their protocol consisted of 20-minute writing sessions on three consecutive days plus the addition of a spoken narrative about the most salient aspect of the traumatic experience (total of four sessions). As evidenced by Sloan and colleagues (2004, 2005) who achieved habituation in three 20-minute sessions, four exposure sessions could have offered sufficient time for habituation, suggesting that something other than lack of time (i.e., lack of coping skills) may have prevented better outcomes.

Honos-Webb and colleagues (2000) reported that several expressive writing participants experienced worse outcomes, and looking closely at these participants sheds light on the nature of the problems. For one participant, writings showed explicit avoidance of writing about the trauma until the last day, which created an artificially short exposure. The increase in healthcare visits could be regarded as a normal outcome of an exposure that fails to lead to habituation. This

situation is akin to having a dentist poke and prod but not conduct a necessary root canal, and a brief poking and prodding some time later will have the same detrimental effect of inflicting pain with no benefit.

The other two participants (Honos-Webb et al., 2000), who also showed increases in healthcare visits, implied in their narratives that they had achieved resolution or peace with their trauma but the authors suggest the participant had simply "sugarcoated" them. This expression reflects what Beck, Rush, Shaw, and Emery (1987) termed maladaptive cognitive strategies such as 'denial' or 'minimization' and shows another form of avoidance. It is unlikely that giving these participants more time to engage in such behaviors would have helped achieve habituation or resolution. The authors recommended that expressive writing participants be followed closely and that some participants might require supportive therapy, not simply more time writing.

The Rogers et al. (2007) study also showed that expressive writing participants reported increased healthcare visits and experienced more distress at 1-week follow-up. They also demonstrated more 'thought suppression' or tendency to avoid undesired thoughts and memories (assessed by the White Bear Suppression Inventory; Wegner & Zanakos, 1994), and reported not telling friends what they had written about. However, as with the Honos-Webb et al. (2002) study, exposure to traumatic memories that results in seeking out health services might be considered a positive result by many clinicians. Regardless, these studies underscore the notion that exposure without sufficient skills or guidance can, in fact, be detrimental or at least will require subsequent attention.

Lastly, Batten et al. (2002) found that even with demonstrated increases in insight and positive emotion words, participants in the experimental condition showed increases in physical symptoms and no changes psychological distress, while control participants showed reductions

in both. Researchers theorized that four days of writing for 20 minutes per session was simply insufficient time for habituation to occur in victims of "complex trauma" (the sample was 32 survivors of child sexual abuse). However, all of the above researchers acknowledged that other factors may have interfered with habituation. Specifically, working with Vietnam veterans, Pitman et al. (1991) had found that guilt, blame, and anger (which are also common among sexual abuse survivors) are associated with less benefit from exposure therapies. Thus, failures associated with expressive writing may not be due to limitations in time but neglect of cognitive and behavioral issues that may arise during recall and narration of events, such as shame and avoidance. Fortunately, several studies have examined cognitive barriers to symptom reduction.

To test whether actively targeting 'irrational' beliefs would improve the effectiveness of expressive writing as a treatment for depression, Kallay, Vaida, Borla, and Opre (2008) compared a traditional writing condition to another that included training in Rational Emotive Behavioral Therapy (REBT; Ellis & Dryden, 1997) principles. The latter was administered as four days of 20-minute writing sessions, each preceded by 10 minutes of psychoeducation on REBT. Both conditions showed reductions in depression symptoms, suggesting that, for mild depression, standard expressive writing instructions are sufficient. However, on a measure of mood states, the REBT condition showed significantly greater reductions in 'confusion' and 'hostility' suggesting greater psychological benefits from explicitly targeting cognitions. A similar study has not yet been conducted with a sample experiencing major depressive disorder or PTSD, but this finding suggests the advisability of enhancing expressive writing with the addition of cognitive skills training.

Cognitive skills training is advisable because research has also demonstrated relationships between rumination, worry, anxiety, and depression in clinical and non-clinical

samples (Beck et al., 1987; de Jong-Meyer, Beck, & Riede, 2009; Ellis & Dryden, 1997; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994). Rumination researchers contrast a positive and negative type of turning inward and thinking about problems. Definitions of negative rumination include a focus on depressive symptoms and their implications (Just & Alloy, 1997), and when described with 'worry' they are said to be, "cognitive processes characterized by thinking in an elaborate, repetitive way about personal concerns with difficulties terminating these chains of thoughts" (de Jong-Meyer et al., 2009). Examples of ruminative behavior include expressing to others how poorly one is feeling, wondering why they feel that way, and worrying about what may come of it (Just & Alloy, 1997; Smith, Alloy, & Abramson, 2006). Similarly, negative ruminators have been shown to repeatedly engage in trying to answer questions that can rarely be resolved, such as asking 'why' questions about feelings, events, and perceived mistakes (Watkins, & Baracaia, 2001, 2002). It may be that minimally guided expressive writing promotes negative rumination in some participants while others are more intuitively able to focus on 'positive rumination'. Examples of the latter would be 'lessons learned' or recognizing that a trauma could have been worse (Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Williams et al., 2002). Differences in rumination may help explain why some people benefit from expressive writing while others do not; this has been tested using the Ruminative Response Scale.

The Ruminative Response Scale (RRS), developed by Treynor, Gonzalez, and Nolen-Hoeksema (2003) contains an overall measure of rumination, as well as a negative subscale the authors termed 'brooding' and a positive subscale called 'reflection'. The latter is characterized by an orientation of problem-solving when turning inward to examine depressive content. Over a 1-year period they found stability in rumination styles and that negative rumination was

positively and strongly associated with higher depression at both the beginning of the study and a year later. In contrast, positive rumination was only weakly associated with depression at either time point. Gortner, Rude, and Pennebaker (2002) applied the RSS to an expressive writing study and showed that 'brooding' mediated the effects of expressive writing; participants who showed a decreased post treatment score on the 'brooding' subscale also showed a decrease in depression after expressive writing, while those whose depression did not decrease also showed stable higher brooding.

These findings have led the present author to question whether expressive writing which does not yield positive outcomes may be hampered by negative rumination. This would also be congruent with the finding that victims of trauma often experience disturbing cognitions regarding the past, present, and future as all unalterable (Chard, Resick, Monson, & Kattar, 2014), which is consistent with Beck's depressogenic schemas about the self, the world, and the future (Beck et al., 1987). These findings may also explain the null results found with expressive writing among caretakers of the chronically ill (Ashley et al., 2010) since circumstances for those participants are unlikely to change in the foreseeable future.

Despite the close association between negative rumination and depression, it should be noted that Gortner et al. (2002) did not find that higher scores in 'reflection' predicted better health. This lack of effect from a seemingly positive activity is consistent with the finding that insight, coherence, and positivity about the events may not be sufficient to bring about improvements in health (Batten et al., 2002; Honos-Webb et al., 2000). Yet the success of CBT for depression (Beck et al., 1987), and the success of CPT for PTSD (Schnurr, 2008) suggest that some clients may benefit from activities that reduce brooding and challenge cognitive distortions

associated with their trauma. Furthermore, in contrast to 12 weeks of CPT, Kallay et al. (2007) demonstrated the ability to benefit from challenging cognitions via a brief intervention.

Alexithymia may interfere with obtaining benefits. The impact of alexithymia (i.e., difficulty identifying and describing emotions) on expressive writing outcomes has shown mixed results. Frattaroli's meta-analysis (2006) found that alexithymia was unrelated to outcomes. However, Ashley, O'Connor, and Jones (2010) found that low alexithymia was predictive of improvements in depression and anxiety after EW, while high alexithymia was unrelated to outcomes. In contrast, studies by Baikie (2008), Paez, Velasco, and Gonzalez (1999), and Solano, Donati, Pecci, Persichetti, and Colaci (2003) reported that participants with higher alexithymia benefitted more from EW than those low in that trait. Baikie concluded that offering encouragement and motivation to explore emotional experiences may have helped alexithymics to overcome that deficit. These mixed findings suggest that alexithymia may moderate the impact of expressing a trauma narrative; they also suggest that addressing alexithymia could be helpful for some victims of trauma. In addition to identifying potential obstacles and beneficial practices and processes for the treatment of trauma symptoms, many of which could be combined in a comprehensive yet brief treatment, research from other areas may offer contributions as well.

Insights from Other Lines of Research

While anger, shame, and guilt have not been explicitly studied with expressive writing, Pitman et al.'s (1991) finding that these emotions were obstacles to achieving habituation in exposure therapy suggests the importance of exploring and addressing them in trauma treatment. They are also specifically targeted in CPT (Chard et al., 2014). As specific forms of rumination, anger, shame, blame, and guilt often involve difficulty 'forgiving' or 'letting go' of an

association between a trauma and specific persons or causes. Forgiveness researchers have found psychological and functional benefits associated with achieving forgiveness and reductions in blame, usually facilitated by increases in understanding, compassion, and acceptance of human limitations. Samples have included victims of childhood sexual abuse and other victimization experiences considered very difficult to forgive (Enright, 2001; Fitzgibbons, 1986; Freedman & Enright, 1996; King & Miner, 2002).

While CPT dedicates entire sessions to themes that may not be relevant to all victims (i.e., safety, trust, power/control, esteem, and intimacy; Chard et al., 2014), perhaps a brief, directive protocol could include a brief assessment of specific maladaptive cognitions regarding anger, shame, blame, esteem, control, intimacy, and guilt and then target only those that are necessary. Similar practices are also found within Dialectical Behavior Therapy.

Dialectical Behavior Therapy (DBT; Linehan and Dexter-Mazza, 2008), which has a strong evidence base for the treatment of borderline personality disorder and reduction of self-harm behaviors, targets self-blame and stigmatization when traumatic event histories are considered. Through exposure and cognitive techniques, patients are helped to recall and accept their traumatic events, and to reduce denial and ambivalence about the events and the people involved. DBT normalizes the experience of seemingly contradictory emotions, such as dread and excitement, and promotes dialectical thinking which reduces black-and-white analyses of events. In addition, DBT prepares people for this work by promoting mindfulness and acceptance, and addressing deficits in emotion regulation skills. Some of these practices have also been developed into stand-alone therapy programs with increasing evidence bases for treating a variety of disorders. Some of these will now be described.

Mindfulness Based Cognitive Therapy (MBCT; Ma & Teasdale, 2004) and Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) are two "third wave" cognitive-based therapies, among others, that treat mindfulness and acceptance as interventions in and of themselves. By 'acceptance' researchers mean a willingness to allow an exposure to occur and continue without enacting avoidance and escape behaviors. Clients are taught to 'turn toward', 'make room for', 'approach', and 'sit with' noxious stimuli. In this process clients are often invited to practice 'mindfulness', which may be likened to a scientist simply observing and describing or taking notes of phenomena. It is characterized by simply 'noticing' or making observations about one's own breathing, feeling, thinking, or other experiences while 'withholding judgment' (e.g., good/bad, pleasant/unpleasant). Mindfulness is theorized to increase flexibility in responding to stimuli since emphasis is placed on awareness of one's cognitions and physiological responding and withholding or reconsidering judgments.

Mindfulness practices can be applied in reference to intruding external stimuli, such as unwanted noises, as well as to private, internal stimuli such as unwanted traumatic memories. In DBT these techniques assist with 'emotional regulation' during emotionally volatile moments since mindfulness and acceptance generally result in lowering arousal and allowing considerations for making less impulsive decisions and which are more in line with one's values (Linehan & Dexter-Mazza, 2008). Mindfulness and acceptance have also been incorporated into various transdiagnostic treatment protocols by Barlow and colleagues (2010). Acceptance and mindfulness therapies have demonstrated success in treating many types of disorders including suicidality, substance abuse, anxiety disorders, and depression (Hayes et al., 2004).

In acceptance and mindfulness therapies, experience, judgments, and behaviors are often explored as potentially rigidly associated or automatic, much like physiological reflexes. This

rigidity is often expressed in cognitions that equate the self with a judgment (e.g., "I am a failure" and, "I am depressed"), which is described as 'fusion' by ACT theorists. Similar to Beck's (1991) concept of maladaptive schemas, rigidity may be found in often unstated but deeply held 'rules' about living that contribute to distress (e.g., "I must not be depressed", "I cannot live my life until I overcome anxiety"). These rigid reflex-like cognitions are identified by acceptance- and mindfulness-based therapies and targeted for intervention. The goal is to promote flexibility marked by *noticing, consideration,* and *choice* among various potential responses rather than being subject to rigid reflexive responding.

In addition to merely serving an approach-and-remain-amidst-unpleasant-stimuli function, the term 'acceptance' is also used in therapy literature to describe a kind of peace or resolution regarding events (Hayes et al., 1999; Linehan & Dexter-Mazza, 2008; Williams, Davis, & Millsap, 2002). Williams and colleagues (2002) specifically studied successful coping with trauma and found five categories of behaviors associated with coping: denial, regret, acceptance/resolution, seeking positive aspects of the experience, and acknowledging situations that would be worse. These five behaviors can be categorized into two responses to traumatic events. The first group appears to involve rejection and non-accommodation while the latter group could be said to involve approach and accommodation. As suggested by the numerous studies reviewed above, it may be that emphasizing denial and regret positively reinforces avoidance of trauma-related stimuli and prevents habituation. In contrast, emphasizing acceptance/resolution, seeking positive aspects of the experience, and comparing one's situations to worse ones may be promoting habituation and subsequent improvements in health. In short, it can be theorized that continued cognitive rejection prevents habituation while decreasing rejection and increasing forms of acceptance may be beneficial for trauma victims.

Targets for intervention regarding rejection could include manifestations of denial; suppression; minimization; regret; intentional neglect; avoidance; escape; and even lack of registration (i.e., dissociation). This list of types of rejection is not comprehensive and may not necessarily fit along continuums of incremental degrees. However, all share a kind of non-engagement, withdrawal, or even an effort to push away stimuli.

Given the impact of third-wave therapies on other disorders, they may have much to offer trauma treatment. Furthermore, some of the skills may be applicable in a short form. Intervention targets for increasing acceptance of a trauma could include promoting: resignation to the presence of related memories and stimuli, acceptance or 'making room' for them, treating them as welcome or desired, and even actively looking for them rather than awaiting their intrusions.

Exploring these differing degrees of acceptance could also help clients acknowledge and validate the ambivalence that often accompanies traumatic events (Linehan, 1993). For example, a female rape victim who conceives and gives birth to a child may have difficulty 'holding' acceptance and rejection simultaneously; her rejection of the rape may be in ongoing tension with accepting and loving the child. Treatment can help her acknowledge this tension, validate it, and reduce 'all-or-none thinking' (Beck et al., 1987) and help her grow in her ability to maintain differing responses toward the rape and the child. A new protocol could specifically assess for these potentially unaddressed tensions and work to increase dialectical thinking.

In addition to rumination, alexithymia, and unresolved cognitions that maintain non-acceptance, anger, shame, blame, and guilt, another reason expressive writing studies show mixed results may be that they do not address the negative impact of the trauma on social functioning. PTSD often involves difficulty connecting with others, social withdrawal, and interpersonal conflict (APA, 2013, 2000). Of the many studies cited above, few even mention

social functioning. One exception is a new PTSD treatment specifically targeted to couples and families (Cukor, Spitalnick, Difede, Rizzo, & Rothbaum, 2009). Social maladjustment can be operationally defined as the subjective experience of lack of social support or, simply, loneliness. The assessment of loneliness has an advanced research literature unto itself (Cramer & Barry, 1999), and the comorbidity of loneliness with physical and mental health pathologies and maladaptive behaviors are very well established (Lasgaard, Goossens, Bramsen, Trillingsgaard, & Elklit, 2011; Masi, Chen, Hawkley, & Cacioppo, 2011; May & Klonsky, 2011; Theeke, 2010; Vajda & Steinbeck, 2000; also see Cacioppo et al. 2006 for an excellent review and evidence for changes associated with changes in loneliness). In contrast, social support, defined as having family, friends, and significant others with whom one shares private knowledge and to whom one can turn in time of need, has been associated with better physical and psychological well-being, higher life satisfaction, and more resilience to adverse life events (Bruwer, Emsley, Kidd, Lochner, & Seedat, 2008; Miller & Lefcourt, 1983; Zimet, Dahlem, Zimet, & Farley, 1988). New treatments for PTSD may show better outcomes if they include steps to assess and improve individuals' particular obstacles to social functioning.

Purpose of the Current Study

Given the above findings from expressive writing, PE, CPT, CBT, and third-wave therapies, this study will test the effectiveness of a new, highly directive protocol aimed at promoting the processes identified above which appear to contribute to trauma recovery. This protocol was developed, tested, and adjusted during 2013 and resulted in its current form of 17 exercises distributed across 12 worksheets. Development and pilot testing of the experimental protocol are described further below.

Hypotheses

Primary hypothesis. Participants who complete the proposed directive protocol (DP) in three 25-minute sessions will report greater reduction in PTSD symptom scores than will those who are asked to write about a traumatic experience or a neutral topic using standard expressive writing (EW) instructions in three 25-minute sessions.

Secondary hypotheses. While high levels of depression and physical illness symptoms are not part of the inclusion criteria, it is hypothesized that participants in the DP condition will report greater reduction in these scores than those in the EW condition.

Additional hypotheses. It is further hypothesized that as a group, participants in the DP condition will report greater reductions in the following variables than those in the EW condition: use or endorsement of negative emotion words; scores on measures of alexithymia, negative rumination, thought suppression/avoidance, and denial regarding the trauma. Similarly, greater increases in positive emotion words and in positive cognitive acceptance of the trauma are expected to be manifested by those in the DP condition than those in the EW condition. Lastly, given the importance of social withdrawal and isolation regarding trauma, the DP includes a section to promote problem-solving to increase social contact. It is predicted that greater decreases in loneliness will be reported by those in the DP as compared to those in the EW condition.

METHOD

Participants

Undergraduates at a large public university in the southern United States, and local community members, who self-identified as having experienced a traumatic event, were recruited for this study. Regarding undergraduates, screening to identify potential participants was accomplished by a prescreening battery administered to all students registered in psychology courses who signed up for study credits that fulfilled research requirements in their psychology courses.

To determine a sample size (*N*) that would yield sufficient power to demonstrate and compare the effects of the interventions on PTSD symptoms, an a priori power analysis was conducted. According to Cohen (1988), sample size is calculated as a function of Type I error probability (significance criterion α), Type II error probability (β), the anticipated effect size (ES), and the desired power ($1-\beta$) to detect an effect. The software program G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007) was used for the calculations. To balance the Type I and Type II error rates, that is, to reduce the probabilities of falsely attributing an effect when it is only due to chance, and to reduce the probability of missing an effect that is in fact present, α was set to 0.05 and β was set to 0.20. That is, it was determined that the following were appropriate levels of risk: a 5% chance that the analysis will falsely suggest the presence of an effect, and a 20% chance that an actually present effect will fail to be detected. This results in a power ($1-\beta$) of 0.80 or an 80% chance that an actually present effect will be detected by this study.

To estimate the expected effect size (ES), the most comprehensive meta-analysis was reviewed, which consisted of 146 studies (Frattaroli, 2006). Isolating college samples with trauma, under the variable of 'psychological symptoms', effect sizes ranged from small negative effects (r = -.15) to small (r = .17), medium (r = .25), and very large (r = .60) positive effects. For this reason, small-to-moderate (f = 0.15; Cohen, 1988) and moderate (f = 0.25; Cohen, 1988) effect sizes were entered into the calculation of a 2 (treatment conditions) X 4 (time measurements) repeated measures ANOVA with PTSD symptoms as the outcome variable. The small ES resulted in a total sample size of 62 (or 31 per treatment condition); the moderate ES suggested a sample size of 24 (or 12 per group). For these reasons, and to reduce the impact of attrition, a total of 80-90 participants will be recruited with the intention of retaining 31 per treatment condition through final data collection at 30-days post-treatment.

Measures

Identification of victims of trauma. To identify victims of trauma, the Life Events Checklist (LEC; Blake et al., 1990) was administered in the prescreen battery. This measure lists 17 types of traumatic event and asks whether they witnessed or experienced each. The LEC converges with other measures of psychopathology associated with trauma exposure (Gray, Litz, Hsu, & Lombardo, 2004). To assess level of severity of symptoms, the PTSD Checklist Stressor Specific Version (PCL-S; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Weathers et al., 1993) was included in the prescreener as well. The 17 items were derived from the 17 PTSD symptoms listed in the DSM-IV. They are rated from 1 ("Not at all") to 5 ("Extremely"), with a range of 17-85. The PCL has been demonstrated to achieve a .93 correlation with the Clinician Administered PTSD Scale (CAPS; Blanchard et al., 1996). Individuals with a minimum score of 30 were invited to participate to ensure a sufficient baseline of distress (30 is suggested as the

minimum cut-off score for general population samples; a change of 5 points is considered a reliable response to treatment and a change of 10 points is considered clinically meaningful; U.S. Department for Veteran Affairs' National Center for PTSD (2010) for civilian primary care PTSD screening).

PTSD symptoms. To confirm the inclusion criterion of minimal PTSD symptoms, and to assess changes in PTSD symptoms, the Modified PTSD Symptoms Scale-Self Report (MPSS-SR) was administered. This instrument was adapted from an earlier instrument by Foa et al. (1993) by Falsetti, Resnick, Resick, and Kilpatrick (1993) to distinguish between *frequency* and *intensity* of symptoms. The 17 items assess the 17 symptoms of PTSD in the DSM-IV-TR (APA, 2000; e.g., "Have you persistently been making efforts to avoid thoughts or feelings associated with the event?" and, "Have you been jumpier, more easily startled, since the event?"). Frequency of each item is scored from 0 (*not at all*) to 3 (*5 or more times per week/ very much/ almost always*). Intensity of each item is scored from 0 (*not at all distressing*) to 4 (*extremely distressing*). Internal consistency of .96 and good concurrent validity with the Structured Clinical Interview for DSM-IV (SCID) have been reported (Falsetti et al., 1993). In the present study, a minimum of 12 points at pre-test was required for inclusion, and Cronbach alphas ranged from .89 to .93 for both subscales at all four assessment periods.

Physical health symptoms. Changes in physical complaints were assessed with the Pennebaker Inventory of Limbic Languidness (PILL; Pennebaker, 1982). This contains 54 items with physical health complaints (e.g., "headaches," "congested nose," "coughing") rated from 0 (*have never or almost never experienced the symptom*) to 4 (*more than once every week*). Internal reliability has been reported with Cronbach alpha coefficients ranging from .88 to .91. Test-retest reliability has been assessed at two months with correlations ranging from .79 to .83

(Kearns et al., 2010). In the present study Cronbach alphas ranged from .95 to .96 for the four assessment periods.

Depression and anxiety symptoms. To assess improvements in levels of reported depression and anxiety, the Depression, Anxiety, and Stress Scale (DASS-21) was administered. This measure was developed first as a 42-item measure, then reduced to 21 items by Lovibond and Lovibond (1995). The initial 42-item measure showed internal consistencies of .84 to .91 for the three subscales. A study by Antony et al. (1998) showed alphas ranging from .92 to .97 for the 42-item version, and .87 to .94 for the DASS-21. Exploratory factor analysis with principal components and oblimin rotation showed a 3-factor solution that accounted for 67% of the variance (eigenvalues 9.07, 2.89, and 1.23). Correlations between factors were .48 for stress and depression, .52 for stress and anxiety, and only .28 for anxiety and depression. When compared to the Beck Depression Inventory (BDI), the depression subscale showed a .79 correlation. The anxiety subscale showed a .85 correlation with the Beck Anxiety Inventory (BAI), and a .55 correlation with the State-Trait Anxiety Inventory-Trait version (STAI-T). Others have also reported strong psychometric support (Crawford & Henry, 2003; Henry & Crawford, 2005; Ng et al., 2007). In the present study Cronbach alphas ranged from .83 to .93 for the four assessment periods.

Healthy behaviors. To assess changes in healthy behaviors, the following items were assessed by single item self-reports: missed days of school in the past month; missed days of work in the past month; number of times receiving services at the campus health clinic, counseling center, psychological services center, and from a religious figure in the past two weeks. In addition, single items assessed these for use as covariates: number of times they had written/journaled/blogged about troubling events in the past and this event in the last two weeks;

number of times they discussed this event with a professional (therapist); number of times they had discussed this event with a friend or family member; and whether other disturbing/traumatic events had occurred since their in-person session.

Thought suppression/avoidance. Changes in efforts to avoid unwanted thoughts were assessed with the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994). This 15-item measure rates statements such as, "There are things I prefer not to think about" and, "I always try to put problems out of mind" on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Reliability has been demonstrated with Cronbach alphas ranging from .87 to .89, and re-test correlations have been .92 at one week and .69 at three months. Correlations with instruments for depression, anxiety, and symptoms of obsessive compulsion disorder support the validity of the WBSI for assessing avoidance of noxious thoughts. In the present study Cronbach alphas ranged from .91 to .94 for the four assessment periods.

Rumination. Rumination was assessed with the Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991). Instructions are to rate what one generally does when feeling down, sad, or depressed. The full 22-item measure yields a total Rumination score and three subscales determined by factor analysis assess: 'brooding' (e.g., "Think, What am I doing to deserve this?"), 'depressive rumination' (e.g., "Think about all your shortcomings, failings, faults, mistakes") and 'reflection' ("Go someplace alone to think about your feelings"). Items are scored from 1 (*almost never*) to 4 (*almost always*). The overall scale has demonstrated internal consistency alphas of .89 and .90, with subscale alphas between .72 and .77. Test-retest reliability has been reported as .67. Convergent validity with other measures of ruminative responding has been reported as r =.62 (Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003). In the present study Cronbach alphas for the full scale ranged from .94 to .95 for the four

assessment periods. Internal consistencies ranged from .79 to .87 for the Brooding subscale; .81 to .83 for the reflection subscale; and .92 to .93 for the depressive rumination subscale.

Alexithymia. The 20-item Toronto Alexithymia Scale (TAS-20; Bagby, Taylor & Parker, 1994; Parker, Taylor, & Bagby, 2003) was used to assess difficulty identifying and describing feelings. This is a widely used instrument to assess the construct of alexithymia. Confirmatory factor analyses have repeatedly demonstrated three factors or subscales assessing, 1) difficulty identifying feelings (DIF; e.g., ‘‘I am often confused about what emotion I am feeling’’); 2) difficulty describing feelings (DDF; e.g., “It is difficult for me to reveal my innermost feelings, even to close friends’’); and, 3) a thinking style that is externally oriented (EOT; e.g., “Looking for hidden meanings in movies or plays distracts from their enjoyment”). Items are rated from 1 (*strongly disagree*) to 5 (*strongly agree*). Total scale internal consistency has been demonstrated as Cronbach’s alpha = .81 and 3-week stability of r=.77 (Bagby, Taylor, & Parker, 1994).

A study with U.S., German, and Canadian samples demonstrated reliabilities ranging from Cronbach alphas of .74 to .84. Subscales showed Cronbach alphas ranging from .60 to .83. Factors were correlated within each sample, particularly between the ability to recognize one’s own feelings and communicate about them to others (r’s ranging from .59 to .71). External orientation was also related to difficulty describing feelings (r’s ranging from .39 to .46; Parker, Bagby, Taylor, Endler, & Schmitz, 1993). A more recent study with a community sample yielded a full scale internal reliability of Cronbach’s alpha = .86, with subscale reliabilities ranging from .71 to .80 (Parker, Taylor, & Bagby, 2003). In the present study Cronbach alphas for the full scale ranged from .80 to .87 for the four assessment periods. Internal consistencies ranged from .84 to .89 for the Difficulty Identifying Feelings subscale; .59 to .84 for the Difficulty Describing Feelings subscale; and .52 to .67 for the External Orientation subscale.

Given the lower reliabilities of two of the subscales, only the full-scale TAS score was used in analyses.

Social functioning. To assess whether the experimental protocol would be associated with improvements in social functioning, changes in self-reported loneliness were assessed with the 15-item Social and Emotional Loneliness Scale for Adults-Short Version (SELSA-S; DiTommaso, Brannen, & Best, 2004). A 37-item predecessor (DiTommaso & Spinner, 1993, 1997) was developed to improve upon previous loneliness measures which were unidimensional. This scale distinguishes between loneliness with respect to family of origin, with peers, and with romantic relationships. The short form was validated using four samples (N = 1,572) comprised of university students, spouses of armed forces personnel, and a clinical sample at a psychiatric setting. Cronbach alphas ranged from .87 to .90. As with the 37-item version, confirmatory factor analysis found that a three-factor structure (Social, Family, and Romantic loneliness) provided the best fit (DiTommaso et al., 2004). This scale has also been found to have strong convergent validity with other measures of loneliness (e.g., UCLA v.3; Russell, 1996). Divergent validity has also been demonstrated by weak correlations between the subscales and by expected relationships with measures of secure and insecure attachment (DiTommaso et al., 2004).

Items are rated from 1 (*disagree strongly*) to 7 (*strongly agree*); three items from each scale are reverse-coded. Sample items on the 'family loneliness' subscale are, "I feel alone when I am with my family" and, "There is no one in my family I can depend on for support and encouragement but I wish there was." Items on the 'social loneliness' subscale include, "I do not have any friends who understand me, but I wish I did" and, "I am able to depend on my friends for help." Sample items on the 'romantic loneliness' subscale are, "I wish I had a more satisfying romantic relationship" and, "I have a romantic partner with whom I share my most intimate

thoughts and feelings." Each subscale yields a mean score with means greater than 4.0 suggesting loneliness in that domain (DiTommaso et al., 2004). In the present study Cronbach alphas ranged from .83 to .87 for the peer/social loneliness subscale; .87 to .90 for the family loneliness subscale; and .85 to .88 for the romantic loneliness subscale.

Changes in cognitive processing. To assess changes in positive and negative cognitive coping related to the trauma, the Cognitive Processing of Trauma Scale (CPOTS; Williams, Davis, & Millsap, 2002) was used. Scale development and validation included several stages of item composition, administration, factor analyses, reduction and expansion of items, and retesting. The final version consists of 17 items supported by confirmatory factor analysis which demonstrated a 5-factor model with at least three items each as the best fit. Two subscales assess maladaptive cognitions and three assess positive cognitive coping. Sample items are, "I wish I could have handled this differently" (Regret); "I pretend this didn't really happen" (Denial); "I have come to terms with this experience" (Resolution); "I am able to find positive aspects of this experience" (Positive Cognitive Restructuring); and, "My situation is not so bad compared to other peoples' situations" (Downward Comparison). Internal reliability has been reported with alphas ranging from .72 to .89 (Currier et al., 2013) and test–retest correlations at 4 weeks ranging from .70 to .85 (Williams, Davis, & Millsap, 2002). Divergent and construct validity were demonstrated by inverse relationships between denial and regret with the three subscales that suggest effective cognitive processing (i.e., positive cognitive restructuring, resolution, and downward comparison), and by significant relationships with related subscales tapping stress-related growth, denial, and regret (Impact of Events Scale; Horowitz, Milner, & Alverez, 1979). In the present study Cronbach alphas at the four assessment intervals ranged from .69 to .82 for

the denial subscale; .77 to .82 for regret; .74 to .89 for positive cognitive restructuring; .87 to .89 for acceptance; and .83 to .90 for downward comparison.

Changes in negativity and positivity. Lastly, changes in negativity and positivity were assessed differently depending on the treatment condition. For the expressive writing participants, the LIWC software program (Pennebaker & Francis, 1999) was used to count percentages of positive and negative emotion words used during each writing session. For the experimental protocol, positive and negative words endorsed at Steps 2 and 3 were counted and percentages compared to those endorsed at Steps 10 and 11.

Subjective units of distress (SUDS). Throughout the interventions, researchers also recorded participant subjective ratings of feelings of distress from 0 to 100. In the EW condition, ratings were obtained at the beginning and end of each intervention period, and approximately every 7 minutes. The ratings at the beginning of writing sessions were requested as the current feeling; subsequent ratings asked for the highest level since the prior rating. This resulted in 15 SUDS ratings for the EW condition. For the DP condition, each "Step" had a beginning SUDS phrased as current feeling, and a final SUDS phrased as the "highest level reached" during that Step. This resulted in 24 SUDS ratings for the DP condition.

Procedure

The first informed consent was obtained prior to participants completing the general university screening instrument, which includes the Life Events Checklist (LEC) and the PTSD Checklist (PCL-S). Students who self-identified on these measures as having experienced a traumatic event, and who endorsed symptomatology on the PCL-S of 30 points or higher, were contacted by e-mail and invited to participate in the present study. This study was described in an email as an investigation of coping with difficult life experiences and included a link to an

informed consent page and pretest measures. Pre-test battery assessed students' current level of PTSD symptoms, physical health symptoms, healthcare visits, anxiety and depression symptoms, healthy behaviors, level of thought suppression/avoidance, rumination, alexithymia, and loneliness, and levels of positive and negative cognitive processing of their traumatic experience.

After completing pre-test measures online, participants were scheduled and individually attended an in-person session in an office furnished with a chair, desk, and computer with internet access. Randomization to one of two treatment conditions occurred when participants arrived for the in-person session by means of flipping a coin. Heads indicated the expressive writing condition (A) and tails indicated the experimental protocol (B).

After obtaining signed informed consent, the participant received her assigned treatment (see Appendices A and B for each condition). The interventions were administered in three 30-35 minute sessions within a single in-person meeting divided by two 5-minute breaks. After she completed her treatment, she was asked how she was feeling. If any participant appeared or reported being distressed she was invited to either: 1) be escorted to the University Counseling Center or the Psychological Services Center on campus, 2) be helped to schedule an appointment at one of the facilities on the list, or 3) call a relative or good friend. Once any safety concerns were abated, she was thanked and given a list of local therapy resources in case she felt troubled by emotions and memories brought up by the study. The project supervisor (Karen A. Christoff) was also available by phone to guide therapist-researchers in helping any distressed participants. Out of 88 administrations, two situations required researchers to consult supervisors. The first concerned possible mandatory reporting of an abuser but was deemed unnecessary due to a traumatic brain injury that had incapacitated the abuser seven years prior to this study. The other concern regarded participant reports of suicidal ideation. The intervention was terminated, the

participant was assessed for suicidality, and he was periodically contacted to monitor well-being. This adverse incident was reported to the Institutional Review Board (IRB), which oversaw the study.

As follow-ups, participants were e-mailed links to complete post-test measures online within 24 hours, at 14 days, and at 30 days. An added incentive was offered for completing these final post assessments; completers were entered in two drawings to win $50 gift cards to a vendor of their choice.

Researcher training, competence, and treatment adherence. Reliability and validity of research on interventions can be compromised by differences associated with researcher competence, adherence to treatment protocols, and consistency of treatment delivery (Bellg et al., 2004). According to a comprehensive review of best practices, researchers conducting intervention studies are encouraged to take steps to ensure that all participants receive equivalent "dosages" within and between treatment conditions. Dosages are generally understood as providing a fixed number and duration of intervention contacts, a fixed amount of information conveyed, and consistency in protocol delivery. This requires training administrators and evaluating their performance in a number of areas (Bellg et al., 2004).

However, given that the experimental protocol was testing the deliverability of a very high dose of information and therapeutic experience in a brief amount of time, the amount of fixed information delivered across conditions was not expected to be the same. Instead, equivalence between conditions was established by providing comparable levels of experimenter warmth (itemized in Appendix E); administration of the intervention in three consecutive sessions of 30-35 minutes each separated by 5-minute breaks; the use of a written protocol in each condition (Appendices A and B); and the use of checklists regarding procedures

(Appendices F and G). Sessions were videotaped and coders (undergraduates) were trained to achieve 90% agreement on the instrument that will be used to assess experimenter warmth, competent administration and handling of questions, and participant reception (Appendix E). Three coders were recruited and trained, with two coders rating 45 (52%) of the sessions.

Protocol administrators were graduate students in a doctoral clinical psychology program. Protocol administration training consisted of the principal investigator leading other administrators through the scripts and protocols, implementing role-plays, observing pilot administrations, and giving feedback until they achieved perfect administration per the administration checklists, protocols, and warmth ratings. Periodic meetings provided booster sessions to reduce drift among administrators as well as coders. Coders were blind to study hypotheses.

Development of the Experimental Protocol

The DP (Appendix B) was developed to direct participants toward behaviors and processes associated with improved outcomes. It used a paper-and-pencil worksheet format to elicit active cognitive engagement by the participant and a clear sequential curriculum for administrators. Given the aversiveness of traumatic memories and related emotions, early steps in the experimental protocol provided psychoeducation and exercises to prepare and motivate the individual to fully engage with her trauma memories and related emotions. This approach was modeled after PE (Foa et al., 2005) and CPT (Resick et al., 2008), both of which explicitly dedicate initial work to introducing the concepts behind PTSD treatment and normalizing the experiencing and processing of emotions. The DP also incorporated mindfulness exercises to assist with reducing efforts to avoid unpleasant emotions and memories. In addition, as is common with exposure therapies, each step began with an assessment of Subjective Units of

Distress (SUDS), rated on a scale from 0 to 100, and ended with a rating of the highest SUDS level experienced during that worksheet. The following describe each step of the protocol.

Step 1A: Psychoeducation to normalize physiological reactivity. The introduction acquainted participants with the concept of 'autonomic' responses to physical exercise (such as increased heart rate, breathing, and sweating). Attention was drawn to how well the body generally regulates itself without conscious commands. It was suggested that interfering with that process (e.g., trying not to sweat) would be unnatural and unhelpful. An image of a large dam helped illustrate tense unnatural obstruction, and a silhouette of a jogger symbolized the normality of autonomic functioning in response to stressful activity.

Step 1B: Experiential practice. Participants were then invited to observe the relationship between their own cognitions and physiological responses using exercises like those found in Barlow et al. (2010), and Hayes et al. (1999). The first example used the mental image of a lemon and the tendency to salivate when vividly imagining tasting a slice. Another invited participants to imagine jogging and observe changes in their breathing and perception of warmth. The last exercise demonstrated increasing levels of awareness about tension in one's shoulders and the ability to consciously influence relaxing them further and further despite thinking one had already fully relaxed them. At the conclusion of Step 1, it was suggested that, as experienced in the exercises above, our somatic (i.e., conscious, voluntary) system can sometimes be ahead of or lag behind our autonomic system.

Step 2: Prolonged emotional exposure. After the introductory practice, which did not mention traumatic memories, the second step began by suggesting that the individual probably spent some effort avoiding unpleasant thoughts and feelings (Hayes et al., 2004). This acknowledgement was followed by inviting her to notice the safety of her current situation and to

relax (Foa & Kozak, 1986; Resick et al., 2008). Further psychoeducation was provided to suggest that autonomic regulation sometimes respond to memories, ideas, and dreams in a way that is indistinguishable from responses to current externally present threats, and that as one maintains conscious awareness of current safety, the perception of threat subsides as does related arousal.

This psychoeducation was then followed by an invitation to endorse emotions (from a list) that were associated with the participant's most disturbing or traumatic experience. Participants were asked to try to *feel* those emotions, "ride them out", and "hold nothing back". The image of the jogger was repeated to recall the expectation of bodily reactions to cognitions. The goal was to elicit arousal and facilitate prolonged exposure to specific emotions (Sloan et al., 2005, 2007), and to help overcome potential difficulty identifying or describing them (i.e., alexithymia; Ashley et al., 2010; Baikie, 2008; Paez et al., 1999; Solano et al., 2003). Choice of words for this list was based on research findings described below.

Step 3: Endorsement of positive emotions. A list of positive emotion words was also considered to introduce the potential of positive outcomes from the trauma. This list also allowed assessment of a baseline that could demonstrate change by the end of the protocol. This activity also served to identify early "sugarcoating" (see Honos-Webb et al., 2000), denial of impact, or non-engagement with the trauma and allowed the protocol administrator to address potential barriers before continuing.

Development of emotion lists. The lists of negative and positive emotion words were generated from a longer list of nearly 14,000 words gathered and tested among thousands of participants by Warriner, Kuperman, and Brysbaert (2013) and their research predecessors (Bradley & Lang, 1999). Their published list includes only the "highest-frequency" words

known to at least 70% of participants from a longer list of 30,000 words. Words were rated by that study's participants from 1 to 9 on three dimensions: 'valence' (from happy to unhappy), 'arousal' (from excited to calm), and 'dominance' (from feeling controlled to feeling in control).

In selecting words for inclusion in the DP protocol, a first sort procedure by this author was based on 'valence'. This led to marking negatively valenced words in red and positively valenced words in blue from the highest and lowest valenced 3000 words (1500 in each direction). They were marked if they could 'reasonably' be used as an expression of feeling about a situation.

Next, two other lists of negative words (from the principal researcher's worksheets used with crisis center patients and distressed couples) were compared to the new list and all were found to be included in the 3000 words. Words were then eliminated from the list if they were redundant with other words on the list or did not express an emotion (e.g., [feeling] sad), a potential metaphor or actual experience (e.g., [feeling] beaten, cheated), a related way of expressing feelings (e.g., [feeling] neglected), or a resulting attitude (e.g., [feeling] cynical, distrusting). That stage reduced the lists to 317 negative and 286 positive words. Sorting by valence then showed that a majority of the words represented fairly extreme feelings; some middle-valenced words were retained for their ability to express unique concepts (e.g., [feeling] inexperienced, hardened, fated, abnormal, disposable, absolved, relentless, rugged, rebounding, transcending).

Words were then grouped according to themes and some additional redundancies were eliminated; however, many redundancies at this stage were preserved for the purpose of increasing arousal and prolonging exposure to the aroused feelings. A pragmatic concern of limiting words to single worksheets resulted in 187 negative and 212 positive words. Pilot testing

and feedback (see below) concerning confusion about definitions reduced these to 171 negative and 110 positive words.

Step 4. Identifying brooding-style rumination. This step was designed to raise awareness of unhelpful thoughts and negative predictions and to normalize them as common thinking traps. Sentence stems were provided and required completion by the participant (e.g., "If only…"). Stems were derived from the depression, rumination, and coping literature cited above.

Step 5A. Answering maladaptive cognitions. The next stage used traditional CBT prompts to identify 3 negative thoughts or predictions, and taught participants to challenge them by comparing evidence for and against the accuracy or likelihood of those cognitions and predictions (Beck et al., 1987).

Step 5B. Promoting problem-solving to decrease isolation. In addition to learning to question maladaptive cognitions, participants were next challenged to identify three things they could do to feel less isolated and develop closer friendships. This section Socratically invited participants to consider contextual differences that could facilitate disclosure of the trauma to potentially close others (e.g., alone rather than in a group, in a place or activity that offers abundant time, and preparing the listener to make appropriate responses).

Step 6: Reducing anger and emphasis on blame. Psychoeducation explained that full responsibility is rarely found in a single person or cause (Enright, 2001; Fitzgibbons, 1986; Freedman & Enright, 1996; King & Miner, 2002). There are often circumstances that mitigate responsibility, and that would reduce the mystery behind behaviors that caused great harm. The example was offered of whether the participant would remain angry at an aggressive driver if he found out the driver had been rushing to the emergency room. This was followed by a list of circumstances that might apply to the participant's case, from which he could endorse any that

were applicable. He was also asked to imagine three discoveries of new information about the person they blame for the event that would greatly reduce the level of anger they felt toward that individual. The goal was to dissipate highly focused anger, blame, shame, and guilt.

Step 7. Recalling details of the trauma. Based on the research regarding the importance of memory cues (Foa & Kozak, 1986) and increasing coherence of fragmented memories (Pennebaker, 1997), this step asked participants to list sounds, smells, tastes, and visual and tactile perceptions associated with their traumatic event. It began with psychoeducation on behavioral theory that avoidance of trauma cues is reinforcing, and that failure to encounter such cues in a variety of contexts likely prevents generalization and habituation to them. In contrast, recalling such cues in a safe context may initiate habituation and also facilitate the development of a complete and coherent account of the trauma.

Step 8. Promoting acceptance and positive coping. To further elicit and shape positive cognitions (King and Miner, 2000; Williams et al., 2002), this step began with an invitation to identify three things learned as a result of the traumatic experience. This was followed by introducing the possibility of having different responses to memories of the trauma in the future. Specifically, it invited them to imagine a time in the distant future in which they might feel less disturbed by the trauma, with a list of possible future reactions presented for consideration and endorsement. Participants were challenged to consider (yes/no/maybe) whether feeling better would likely involve behaviors such as continued denial and avoidance, acceptance and willingness to discuss the event, allowing themselves to "ride out" negative emotions, and/or positive views about broader challenges and uncertainty in life.

Step 9. Cognitive integration. In this step, participants were asked to write or narrate a comprehensive account of the event. They were prompted to include contextual factors (i.e., age,

setting, who was involved or absent), emotions, sensations, actions, and reactions; words and phrases from previous exercises can also be incorporated. They were asked to "tell it like a movie," "as if it is happening right now", and to end it with lessons learned or positive aspects of the experience. Actual writing was not required, although writing of emotion words and reminders/sensory cues was encouraged for additional exposure and habituation.

Step 10. Emotional integration (negative). Participants were then presented with the same negatively valenced words as in Step 2, with instructions to endorse only those that currently still feel relevant. This exercise provided an opportunity to experience (Foa & Kozak, 1986; Pennebaker, 1997) and consciously acknowledge (Williams et al., 2002) reductions in negativity.

Step 11. Emotional integration (positive). In this step, participants were asked to endorse current positive feelings regarding their traumatic experience using a list of positive words from Step 3. The aim of this step was to strengthen the association between the disturbing event and positive cognitions and feelings about it (Williams et al., 2002).

Step 12. Recap and building hope. This final step reviewed the principles and practices explained and experienced during the protocol, such as allowing emotions, practicing acceptance/reducing avoidance, and allowing habituation to occur. The protocol ended with an invitation to identify areas of increased hope, which also allowed the therapist-researcher a further opportunity to assess the degree to which the participant has been helped by the protocol.

Pilot Testing of the Experimental Protocol

After obtaining approval by the University of Mississippi Institutional Review Board (IRB), a previous 9-step experimental protocol was administered to five participants identified on the prescreen instrument as having at least moderate PTSD symptoms in relation to a disturbing event. Traumatic experiences ranged from the death of grandparent, to the unexpected

murder of a loved one, to a sexual assault ("date rape"). Based on participant feedback about instructions and words that were unclear or needed clarifying, and the noted presence of anger and blame that were not sufficiently addressed, the instrument was revised and expanded to its current form. Throughout, participants reported encouraging reductions in symptoms of PTSD and depression, as well as in the hypothesized behaviors and attitudes such as thought avoidance, rumination, alexithymia, and the use of denial or minimization as a coping strategy (Alessandri & Christoff, 2014).

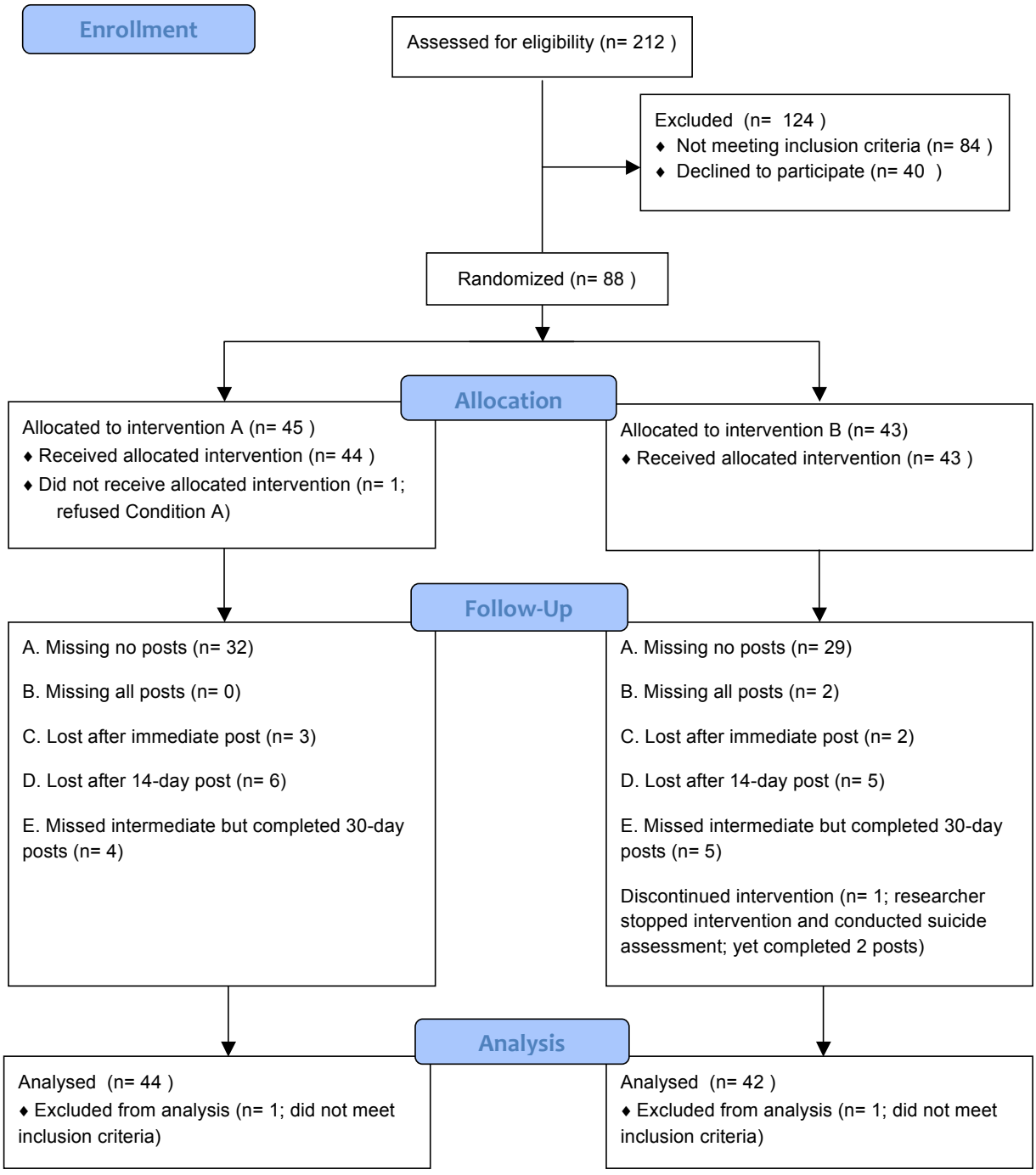
Specifically, the following were added based on areas needing more attention: a more explicit task to identify and challenge negative cognitions about the meaning of the trauma; a problem-solving task of identifying actions that could be taken to achieve better social connectivity and feeling understood by others; and the final step of reviewing the principles and practices as well as identifying reasons for hope. In addition, the presentation of the positive emotion words was duplicated to include their endorsement at the beginning rather than only at the end. In addition, the role of anger had initially been underestimated, leading to augmentation of the sections on reducing anger/blame and increasing acceptance. Several word changes were also made to improve task instructions and explanations.

RESULTS

Data preparation and reliability.

Participants. Of the 212 people who completed the screener survey, 84 did not meet inclusion criteria. A total of 128 were invited to participate in an intervention condition (including two who should not have been invited due to PTSD symptom scores that did not meet inclusion criteria). A Consort-compliant diagram is provided in Figure 1. Of those invited, 40 declined to participate. In total, 88 individuals received an intervention. However, the two who did not meet inclusion criteria were dropped from the analyses. In addition, two participants require special mention. One refused her randomly assigned treatment condition (A) and was administered Condition B. The other expressed suicidal ideations that concerned the researcher who then deviated from protocol and terminated the experimental administration. These two cases were included in the intent-to-treat analyses, in their randomized condition. In sum, 86 participants met inclusion criteria; 85 accepted randomization to a condition; and 85 received the full dosage of their intervention condition. All 86 were included in the analyses; 44 were in the A condition and 42 in the B condition. Missing assessment patterns requires its own extensive discussion (below).

Figure 1. *Flow of Participants Through the Trial.*



Missing data. The planned strategy for the main analysis was to compare the pre-assessment score for PTSD symptoms against a final post-assessment score. However, not everyone completed the 30-day post, and other patterns emerged such as 14-day posts that were completed at four weeks, suggesting the advisability of moving data to their best matching temporal position; these preparatory steps are discussed in detail below. However, prior steps were necessary to prepare the data for missingness analyses.

Careless responding. To assess for unreliable responding, raw data for all scales were examined by calculating standard deviations on responding for each case, per scale. Three cases (i.e., 2, 30, and 35, all in Condition B) showed zero variation in responding on four or more scales or subscales at 30-day post; their entire 30-day posts were deleted and treated as missing. For cases #30 and #35, the same occurred with 14-day post scores, which were deleted as well. For case #30, immediate follow-up scores were also considered unreliable and deleted. Three other cases required closer review based on a criteria of three or more scales with zero variation in responding: Case 41 at immediate post; Case 82 at 14-day post; and Case 1 at 30-day post. However, the variability on surrounding scales suggested overall attentive responding and thus these post-assessments were retained.

Accurate follow-up periods. A next step was to examine actual days lapsed from treatment to post-assessments. For this study, tracking treatment effects with consistent time periods was an important aspect of follow-up. Four cases (#23, #45, #71 in the A condition, #46 in the B Condition) showed 14-day posts completed at between 28 and 31 days and had no 30-day follow-up scores; the 14-day scores were moved to the 30-day post positions. Next, the decision was made to limit 30-day posts to a maximum of 42 days (6 weeks) to limit the variability in time-since-treatment; this required deletion of final post scores for five cases which

ranged from 44 to 56 days (#21, #32, #55, and #78 in the A Condition and #6 in the B Condition). An additional case (#85) in the B condition had the 30-day follow-up at 146 days and was deleted; likewise, her 14-day follow-up was at 40 days so these scores were moved to the 30-day post. Lastly, case #86 completed the immediate post and the 14-day post at 15 days. Only the latter was retained.

Internal consistency of scales. Scales used in the study were analyzed for internal consistency for every assessment time point using SPSS. Table 1 summarizes Cronbach alphas for the pre-test and three post assessments. Since two subscales of the TAS-20 showed questionable reliability only the full scale TAS score was used in the secondary analyses. In addition, the pre-test use of the Denial subscale of the CPOTS was less reliable than anticipated but nevertheless within acceptable limits. All other scales showed high internal consistency.

Table 1. *Internal Consistency of Each Scale and/or Subscale for Each Assessment Period.*

	Pre-Test	Immediate Post	14-Day Post	30-Day Post
PTSD Symptom Frequency (MPSS-SR)	.87	.90	.89	.93
PTSD Symptom Severity (MPSS-SR)	.90	.92	.92	.93
Physical Symptoms (PILL)	.96	.96	.96	.95
Thought Suppression/ Avoidance (WBSI)	.92	.94	.94	.91
Depression (DASS-21)	.92	.91	.91	.93
Anxiety (DASS-21)	.84	.86	.83	.85
Stress (DASS-21)	.83	.86	.87	.87
Alexithymia (TAS-20)	.80	.81	.85	.87
Difficulty Identifying Feelings (DIF)	.86	.84	.87	.89
Difficulty Describing Feelings (DDF)	.59	.78	.79	.84
External Orientation (EO)	.52	.55	.60	.67
Rumination (RRS)	.94	.94	.94	.95
Brooding	.79	.82	.85	.87
Reflection	.81	.80	.81	.83
Ruminative Depression	.93	.92	.93	.93
Loneliness (SELSA-S)				
Toward Family	.87	.90	.89	.88
Toward Peers	.83	.87	.86	.86
Toward Romantic	.85	.86	.87	.88
Cognitive Processing of Trauma Scale (CPOTS)				
Denial	.69	.77	.79	.82
Regret	.82	.77	.79	.82
Positive Cognitive Restructuring	.74	.76	.89	.89
Acceptance	.87	.88	.89	.89
Downward Comparison	.83	.83	.84	.90

Outliers. Given that planned analyses were based on assumptions of normal distribution, univariate outliers were explored at all assessment periods. This was done by calculating distances of observed scores from the group mean, per treatment condition. Distances were measured in standard deviations and as recommended by researchers (see Tabachnick & Fidell,

2001); scores above $Z = 3.29$ (i.e., three standard deviations) were replaced with a score one unit above or below their nearest neighbor that was within three standard deviations. In Condition A, no case at pre-test had outliers; at the immediate post-assessment, case #3 had a very low thought avoidance score (i.e., WBSI = 15) which was increased to 47. There were no outliers at the final two post-assessments in Condition A. In Condition B case #69 had an extreme pre-test PILL score of 241, which was reduced to 205. At 14-day-post case #86 had an extreme depression subscale score (DASS Depression = 21) which was reduced to 15. No other outliers were found in Condition B.

Data transformations. Data were further screened for skew and kurtosis using SPSS EXPLORE. Criteria for regarding skew and kurtosis as excessive (i.e., distributions breaking the assumption of normality) were ratios (i.e., proportion of skew or kurtosis to their standard error) in excess of +/- 2.0 (Tabachnick & Fidell, 2001). Others (see Kline, 2011) have suggested a skew ratio of >3.0 as extreme, and a kurtosis ratio of > 8.0. For the variable examined in the main analysis assessing total PTSD symptoms (i.e., MPSS-SR) excessive positive skew was found at pre-test for Condition A (3.51) although not for Condition B (1.84). A square root transformation was applied (after adding 1.0 to ensure a non-zero score) which brought the skew ratio for each condition within acceptable limits (1.70 and 0.78, respectively). The same transformations were conducted for all post assessments and no ratios remained exceeding 2.0. Kurtosis ratios were also within acceptable limits after the transformations (1.49 was the highest).

Data used in secondary analyses were also explored and transformed for all assessment periods when a variable showed skew in either condition and at any assessment period. At pre-test, the MPSS-SR subscale assessing frequency of PTSD symptoms showed a skew ratio of 3.33 in the A Condition and 2.45 in the B Condition. A square root transformation (after adding 1.0 to

ensure a non-zero score) improved these to 1.35 and 1.42, respectively. Skew ratios for all post assessments were also effectively brought below 2.0. Comparable improvements in skew ratios were also seen with PTSD symptom severity. A pre-test skew ratio of 3.05 in Condition A was reduced to 0.77. At immediate post, skew ratios of 2.17 and 2.82 were reduced to 0.0 and 0.49. Similar improvements were seen for 14- and 30-day post scores.

DASS-21 depression subscale scores were skewed at pre-test for Condition B (2.85). This was improved to 1.24 by a square root transformation (after adding 1.0 to ensure a non-zero score). However, at the 14-day post the transformed variable was still outside the desired skew ratio yet less than when untransformed (Condition B improved from 3.63 to 2.19). Ratios at all other time points were below 2.0 after transformation.

At pre-test, the DASS-21 anxiety subscale in both A and B conditions (2.91 and 3.54, respectively) exceeded the desired skew ratio. Square root transformations (after adding 1.0 to ensure a non-zero score) brought these scores within acceptable limits (0.41, 1.39), as well as at all post assessments.

At the 14-day post the DASS-21 stress subscale was positively skewed for condition B (2.45). This improved with a square root transformation (after adding 1.0 to ensure a non-zero score) to 0.66 without adversely affecting other scores when applied to them as well.

At pre-test thought avoidance/suppression (WBSI) was skewed for Condition A (-3.23) but acceptable for Condition B (-0.44). Due to negative skew, the best transformation first reversed the scores (i.e., 76 minus each observed score) and then calculated the square root of each. While this reduce skew at pre-test to 0.27 for Condition A, it increased skew for Condition B to -1.67, which was still within acceptable limits. At immediate post the Condition A skew ratio was still beyond desirable limits (-2.68) but this was less skewed than when untransformed.

At pre-test the "downward comparison" subscale of the CPOTS was negatively skewed under both conditions (A=-3.30, B=-2.32). Scores were first reversed (i.e., 8 minus each observed score) and then transformed by square root and brought within acceptable limits (A=2.10, B=1.08). At immediate post a ratio of -4.27 in the A condition improved to 2.40, and from -2.68 to 1.50 in the B condition. Skews from the 14- and 30-day posts were also improved.

At pre-test, physical illness symptom scores (PILL) were skewed (ratios of A=2.45, B=2.54) and a square root transformation (after adding 1.0 to ensure a non-zero score) brought ratios within acceptable limits (A=1.42, B= 1.67). Similar improvements were seen with the immediate post. Post scores for Condition B improved from a ratio of 3.17 to 2.39 at 14-days post, and from 3.43 to 2.75 at 30-days post.

Loneliness regarding family (SELSA-S) was skewed for both conditions at pre-test (A=2.44, B=2.87). Square root transformations (after adding 1.0 to ensure a non-zero score) brought these within more acceptable limits (A=1.86, B=2.02). At 14-days a skew ratio of 2.83 was reduced to 2.21 in Condition B.

Scales used to assess alexithymia (TAS-20), rumination (RRS), denial (CPOTS), acceptance (CPOTS), positive cognitive restructuring (CPOTS), regret (CPOTS), and social and romantic loneliness (SELSA-S) were found to be within acceptable limits at all time points. However, they were transformed by square root to facilitate the use of similar metrics to the other scales.

Impact of missing data on choosing analyses. After preparing data based on reliability and moving scores to appropriate time points (e.g. a 14-day post completed at 25 days was moved to the 30-day post position), the resulting pattern of missing data was such that two cases (#30 and #56, both in Condition B) were missing all post assessments; one (#86, in Condition B)

was missing the immediate post; another (#57, in Condition B) was missing the immediate and 14-day post; five were missing both the 14- and 30-day posts (#31, 38, and 65 in Condition A, and #35 and #83 in Condition B); eight were missing the 14-day post alone (#23, 45, 71, and 85 in the A Condition; #46, 50, 51, and 81 in the B Condition); and 11 were missing a 30-day post alone (#21, 24, 32, 48, 55, and 78 in Condition A; #2, 4, 6, 34, and 82 in Condition B). In addition, one case (#51) was missing 10 out of 25 scales and subscales at 30-day post. The possibility of having to drop 18 cases due to lack of a reliable 30-day post led to various considerations.

One potential approach to ensuring a complete pre- and final post assessment was simply to carry forward the last reported score forward, as has been done in many longitudinal studies. However, this procedure has at least two arguments against it. First, it ignores the richness of data collected between those extremes, which may not actually be linear if there is an interaction with a variable such as time. Given that PTSD symptoms involve reactions to intrusive memories, it was anticipated that scores immediately following the intervention might show increases due to intensive contact with such memories, and then be followed by symptom reduction (possibly due to habituation) even with the intrusion of e-mail prompts to complete the 14- and 30-day post assessments. Second, collapsing the data and ignoring potential *causes* of missingness could result in biasing findings toward completers which would limit their generalizability. Thus, methodologists regard exploring data for indicators of missingness mechanisms, and incorporating techniques that minimize resulting biases (Enders, 2010, 2011).

Causes of missingness. Researchers distinguish between data that is "missing completely at random" (MCAR) from missing data patterns that are associated with scores on the outcome variable itself (called "missing not completely at random"; MNAR) or with some other variable

which may or may not have been measured (called "missing at random" or MAR; see Enders, 2010 for a comprehensive summary of missing data theory and analyses).

Regarding item-level missingness in the present study, there was an insignificant number of items (less than 10) lacking data. As a conservative strategy, the few item omissions were replaced with the same score in the previous available assessment, and many showed the same score for that item at the subsequent assessment as well. Two cases lacked SES scores and these were imputed with the sample median (i.e., 7). Among those who completed each assessment period, only two cases failed to complete all the scales. Missing scores for these scales were treated like other missing scores, discussed below.

Regarding scale-level missingness patterns, these were explored in several ways. First, the SPSS Missing Values Analyses (MVA) was conducted with scale score variables entered. This analysis produced a Little's MCAR test which was not significant (χ^2 (394) = 377.06, p = .722). This test compares subgroups with the same missing patterns for mean differences; if these fall beyond the sampling error of the grand means there would be evidence against MCAR (i.e., it would suggest a non-random missing pattern). The weighted sums of the standardized differences between the subgroup and grand means are distributed as a chi-square statistic, which if significant suggests non-MCAR. However, this is not entirely reliable since MAR and MNAR mechanisms can still produce subgroup means that do not deviate from the grand mean (Enders, 2010) and so further tests should be conducted.

The SPSS MVA also produces a table of *t-test* comparisons which, while not controlled for Type I error, provide a first glimpse of variables that might be associated with missingness. These may be useful because methodologists recommend including variables in estimation techniques which are highly related to missingness itself or to outcome variables in analyses

(e.g., if thought suppression scores are highly correlated with PTSD symptoms, they should be used in estimating the missing PTSD symptom scores). At the first stage of missingness in the present study (i.e., immediate post), no significant mean differences were found for any variable between those who completed or missed the immediate-post; this suggests an MCAR mechanism for the four participants who missed that assessment. Similarly, those who completed and missed the 14- and 30-day posts could not be distinguished by their PTSD scores at pre-test or at immediate-post; this suggests an MNAR mechanism is unlikely.

However, subgroups based on missingness at the two final posts did differ on other variables. Table 2 summarizes significant *t-test* results for variables found to differ according to whether participants completed or missed the post-assessments at 14-days and 30-days. Those who missed the 14-day post showed significantly higher distress at immediate-post in terms of depression, stress, and a tendency to brood (ruminate) than those who completed the 14-day post; they also showed significantly less cognitive acceptance of their trauma. This suggests an influence of these variables on missingness according to a MAR mechanism. The eight people who missed the 14-day post but completed the 30-day post also showed significantly higher rumination at final post than those who did not miss the 14-day assessment. This finding suggests those who missed the 14-day post but returned for the 30-day omitted the 14-day post because they were feeling worse, also a potential MAR pattern.

Regarding those who missed only the 30-day assessment, a different phenomenon occurred. Attriters at that point reported significantly lower distress at the 14-day assessment than those who remained in the study. Specifically, at 14 days, subsequent attriters showed clinically and statistically relevant lower distress in terms of severity of PTSD symptoms, physical symptoms, thought avoidance, overall rumination, and the two subscales of reflection

and ruminative depression. This suggests that those who left the study after the 14-day post did so for different reasons (i.e., they were feeling better) than those who completed the final post. While not conclusive evidence of MAR mechanisms, the findings in Table 2 regarding differences in related variables support the presence of such mechanisms, and operating in differing directions (i.e., some participants missing assessments due to negative thoughts about it and others due to feeling better and perhaps thinking further involvement unnecessary).

Table 2. *Differences in Symptom and Attitude Scores (Untransformed) Based on Missingness Patterns at 14- and 30-Day Posts.*

		Differences in Those who Completed and Missed the 14-Day Post PTSD Assessment			Differences in Those who Completed and Missed the 30-Day Post PTSD Assessment		
		Completers (N = 69)	Missing (N = 13)	p			
Scores at Immediate Post	Depression	4.53	8.76	.001	n/a	missing	n/a
	Stress	6.41	9.78	.006	n/a	missing	n/a
	Acceptance	4.40	3.20	.001	n/a	missing	n/a
	Brooding	11.44	13.86	.034	n/a	missing	n/a
					Completers (N = 59)	Missing (N = 11)	p
Scores at 14-Day Post	PTSD Severity	n/a	missing	n/a	11.81	4.96	.014
	Thought Avoidance	n/a	missing	n/a	53.75	43.72	.036
	Physical Symptoms	n/a	missing	n/a	108.81	81.45	.005
	Rumination	n/a	missing	n/a	49.36	35.92	.003
	Reflection	n/a	missing	n/a	10.58	8.21	.006
	Depressive Rumination	n/a	missing	n/a	27.42	18.74	.001
		Completers (N = 59)	Missing (N = 8)	p			
Scores at 30-Day Post	Brooding	10.76	13.89	.011	n/a	n/a	n/a

The SPSS MVA also produced a table of correlated variables. Methodologists recommend including variables that are highly correlated (at least .40) with the outcome measure in analyses that include missing data. Simulation and data studies have shown that these variables can improve estimation techniques without an increase in bias (Collins, Schafer, & Kim, 2001 as cited in Enders, 2010). However, including them requires acknowledgement of changing the model (i.e., adding more predictors), which can create other biases (Wang & Hall, 2008). Table 3 summarizes correlations between PTSD symptoms at the four assessment periods and the other variables assessed in the present study. As expected with repeated-measures studies, strong correlations were found between PTSD symptom scores at proximate assessment intervals. In addition, as expected from the secondary hypotheses, strong associations were found between PTSD symptom scores and the measures of thought suppression, depression, anxiety, stress, (non)acceptance, physical symptoms, alexithymia, and rumination. Additional variables with weaker associations are omitted from the table.

Table 3. *Correlations Between Total PTSD Symptoms and Other Variables, at Each Assessment.*

		TOTAL PTSD SYMPTOMS (MPSS-SR)			
		Pre-Test	Immediate Post	14-Day Post	30-Day Post
Total PTSD Symptoms (MPSS-SR)	Pre-Test	1.00			
	Immediate Post	0.62	1.00		
	14-Day Post	0.49	0.59	1.00	
	30-Day Post	0.52	0.46	0.72	1.00
Thought Avoidance/ Suppression (WBSI)	Pre-Test	0.47	0.37	0.30	0.32
	Immediate Post	0.53	0.68	0.50	0.43
	14-Day Post	0.28	0.52	0.62	0.40
	30-Day Post	0.36	0.49	0.67	0.60
Depression (DASS-21)	Pre-Test	0.54	0.37	0.32	0.42
	Immediate Post	0.45	0.55	0.42	0.39
	14-Day Post	0.41	0.52	0.54	0.45
	30-Day Post	0.21	0.12	0.35	0.52
Anxiety (DASS-21)	Pre-Test	0.51	0.48	0.36	0.43
	Immediate Post	0.51	0.68	0.35	0.35
	14-Day Post	0.46	0.52	0.54	0.40
	30-Day Post	0.34	0.35	0.39	0.46
Stress (DASS-21)	Pre-Test	0.53	0.36	0.39	0.30
	Immediate Post	0.43	0.63	0.42	0.23
	14-Day Post	0.36	0.52	0.65	0.33
	30-Day Post	0.27	0.36	0.42	0.36
Acceptance (CPOTS)	Pre-Test	-0.27	-0.21	-0.19	-0.30
	Immediate Post	-0.23	-0.30	-0.38	-0.46
	14-Day Post	-0.17	-0.14	-0.41	-0.55
	30-Day Post	-0.08	-0.11	-0.37	-0.49
Physical Symptoms (PILL)	Pre-Test	0.37	0.32	0.27	0.15
	Immediate Post	0.45	0.57	0.31	0.17
	14-Day Post	0.43	0.44	0.50	0.19
	30-Day Post	0.38	0.31	0.27	0.21
Alexithymia (TAS-20)	Pre-Test	0.33	0.37	0.32	0.29
	Immediate Post	0.35	0.56	0.49	0.36
	14-Day Post	0.25	0.40	0.49	0.37
	30-Day Post	0.21	0.29	0.54	0.45
Rumination (RRS)	Pre-Test	0.56	0.49	0.29	0.32
	Immediate Post	0.61	0.65	0.45	0.36
	14-Day Post	0.46	0.55	0.48	0.34
	30-Day Post	0.34	0.33	0.41	0.44

Correlations were generated as part of the MVA analysis, which uses an expectation maximization (EM) algorithm to address missing data. This test produced no *P* values. However, when independently analyzed for bivariate correlations with pairwise deletion, all correlations were significant at the .05 level or lower. Yellow indicates a moderate correlation (.30 to .39); blue indicates correlations approaching strong (.40 to .49); and orange indicates a strong or very strong correlation (.50 to .72).

Other missingness analyses. Going beyond the SPSS MVA procedure, five patterns of missingness were logically identified and compared: those who completed all assessments (Pattern A, $N = 59$); those who dropped from the study after the intervention (Pattern B, $N = 2$); those who dropped after the immediate post-assessment (Pattern C; $N = 5$); those who dropped after the 14-day post (Pattern D; $N = 11$); and those who missed the immediate and/or 14-day post but returned for the 30-day post (Pattern E; $N = 9$). One case missed the two middle assessments (#57) and was grouped with Pattern E since they returned for the final assessment. To further explore the possibility of MCAR, MAR, and MNAR, these five patterns were compared for significant differences on the other variables measured in the assessments.

Categorical variables and missingness. Chi-squares were estimated to determine whether treatment condition, researcher, sex, or ethnic majority/minority status were significantly associated with a missingness pattern. Table 4 summarizes number of cases and percentages of participants per categorical variable that fit the assessment-level missingness patterns. Chi-square analyses suggest that none of the missingness patterns significantly differed based on any value of the categorical variables.

Table 4. *Cases in Each Missing Pattern, with Chi-Squares Regarding Values of Binary Variables.*

	No Missing Posts	Missing Immed. Post	Missing after Immediate Post	Missing after 14-Day Post	Some Missing but Returned for 30-Day	Pearson χ^2 ($N = 86$, $df = 4$)	*P*
Expressive Writing	31 (36%)	0	3 (4%)	6 (7%)	4 (5%)	2.51	.643
Directive Protocol	28 (33%)	2 (2%)	2 (2%)	5 (6%)	5 (6%)		
Female	45 (52%)	2 (2%)	4 (5%)	8 (9%)	9 (11%)	3.46	.484
Male	14 (16%)	0	1 (1%)	3 (4%)	0		
Racial Minority	15 (17%)	0	2 (2%)	3 (4%)	1 (1%)	2.25	.690
Racial Majority	44 (51%)	2 (2%)	3 (4%)	8 (9%)	8 (9%)		
Primary Investigator	44 (51%)	1 (1%)	4 (5%)	9 (11%)	4 (5%)	4.76	.313
Research Assistant	15 (17%)	1 (1%)	1 (1%)	2 (2%)	5 (6%)		

Continuous variables and missingness. To examine differences between missingness patterns based on continuous variables, ANOVAs were implemented. Due to unavoidable pairwise exclusions in SPSS, ANOVAs had to be run per assessment period (i.e., pre-test, immediate-post, etc.) to reduce exclusions. Regarding scores at pre-test, alexithymia (TAS-20) scores violated the assumption of homogeneity of variances but mean differences on this variable were not significant. The other variables met the assumption of homogeneous variance at pre-test, and all variables met this assumption on all post-tests; Tukey HSD post hoc procedures were implemented for these. Results are summarized in Table 5, with a graphical representation provided in Figure 2. In effect, the ANOVAs are an additional effort to determine whether the

patterns in missingness illustrated in Figure 2 are due to an MNAR mechanism; if not then estimates for missing data could be imputed from the non-missing scores.

Figure 2. *Mean Observed PTSD Symptom Scores (Transformed) per Missingness Pattern.*

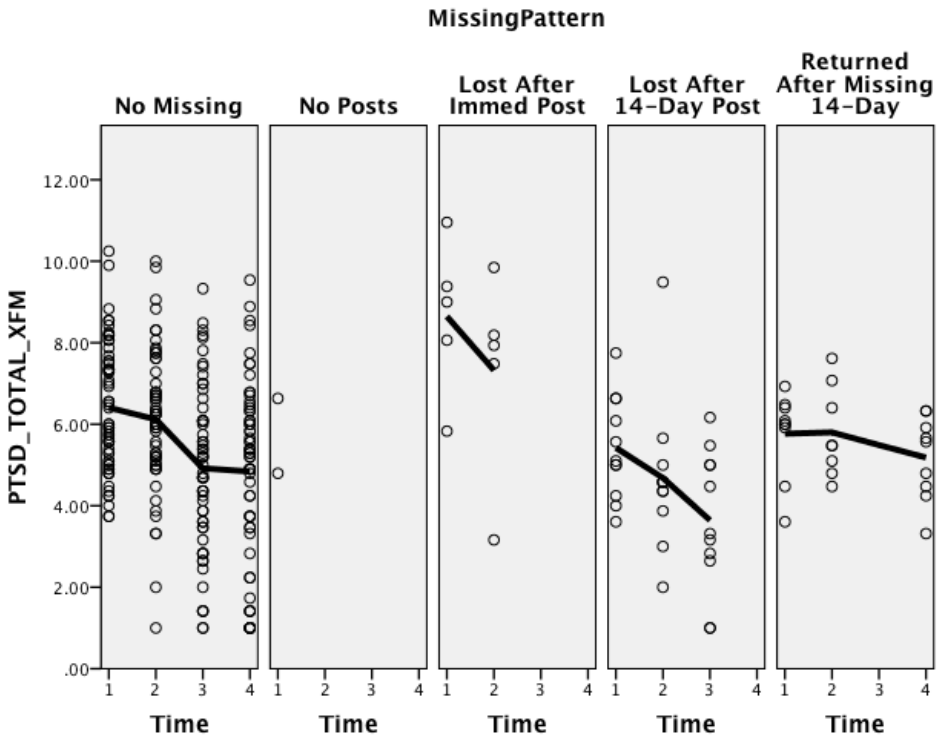


Table 5. *Differences and Standard Deviations (Untransformed) Based on Missingness Patterns.*

	(A) No missing posts (n = 59)	(B) Missing all posts (n = 2)	(C) Missing both final posts (n = 5)	(D) Missing final post (n = 11)	(E) Missing 14-day post (n = 9)	Difference in Means	p
Untransformed Pre-Test Scores							
PTSD Total	40.01 (22.53)	31.66 (16.54)	73.75 (36.21)	28.37 (15.29)	32.24 (13.23)	C - A = 33.74	.016
						C - D = 45.38	.001
						C - E = 41.51	.008
PTSD Severity	21.52 (14.78)	21.00 (19.27)	42.40 (20.60)	14.43 (11.66)	17.79 (6.55)	C - A = 20.89	.027
						C - D = 27.98	.003
						C - E = 24.62	.023
Thought Avoidance	59.37 (15.27)	66.28 (8.17)	68.04 (6.67)	52.86 (20.50)	60.58 (13.01)	C - D = 15.18	.038
Depression	5.31 (5.45)	10.23 (5.50)	9.54 (10.60)	3.66 (6.14)	6.00 (5.33)		n.s.
Phys.Symp	122	130	135	101	129		n.s.
Rumination	52.08 (15.45)	62.98 (2.86)	66.56 (15.57)	44.09 (14.44)	51.41 (14.74)	C - D = 22.20	.045
Untransformed Immediate Post Scores							
PTSD Total	36.46 (23.98)	n/a	52.63 (42.71)	20.90 (21.03)	32.66 (14.22)	C - D = 31.73	.031
PTSD Severity	19.70 (14.01)	n/a	30.94 (24.94)	10.92 (11.38)	17.74 (8.93)	C - D = 20.02	.017
Thought Avoidance	57.08 (17.59)	n/a	65.66 (8.51)	52.31 (21.55)	59.04 (16.49)	C - D = 13.35	.037
Depression	4.92 (5.42)	n/a	10.25 (6.25)	2.68 (4.98)	7.89 (3.37)	C - D = 7.57	.023
Rumination	50.45 (15.33)	n/a	63.02 (14.31)	40.62 (14.03)	52.14 (9.83)	C - D = 22.40	.021
14-Day Post Scores							
PTSD Total	23.18 (24.06)	n/a	n/a	12.27 (15.64)	n/a	$F(1, 68) = 3.81$	.055
PTSD Severity	11.81 (13.82)	n/a	n/a	4.96 (7.31)	n/a	$F(1, 68) = 5.12$	.027
Thought Avoidance	53.75 (20.48)	n/a	n/a	43.72 (30.70)	n/a	$F(1, 68) = 4.97$	.029
Phys.Symp	108 (35)	n/a	n/a	71 (23)	n/a	$F(1, 68) = 7.33$	.009
Rumination	49.36 (15.54)	n/a	n/a	35.92 (10.42)	n/a	$F(1, 68) = 8.24$	.005
30-Day Post Scores							
PTSD Total	22.44 (26.60)	n/a	n/a	n/a	25.83 (11.77)	$F(1, 66) = .198$	.658
PTSD Severity	11.71 (14.44)	n/a	n/a	n/a	13.52 (6.11)	$F(1, 66) = .193$	.703
Thought Avoidance	53.05 (21.56)	n/a	n/a	n/a	56.69 (18.28)	$F(1, 66) = .913$	.343
Phys. Symp	111 (32)	n/a	n/a	n/a	121 (20)	$F(1, 66) = 1.00$	.321
Rumination	47.83 (15.55)	n/a	n/a	n/a	56.76 (12.00)	$F(1, 66) = 2.36$	.129

At pre-test, Pattern C showed significantly greater PTSD symptoms than A, D, and E, suggesting a potential MNAR or MAR mechanism for Pattern C. Pattern C also showed significantly higher scores than D in thought avoidance and rumination, also suggesting a MAR mechanism.

Regarding scores at the immediate-post assessment, Pattern C showed significantly higher PTSD than Pattern D (suggesting MNAR or MAR), and significantly higher thought avoidance, depression, stress, and rumination as well (suggesting MAR). However, the sizable reduction in PTSD symptoms experienced by group C may also have contributed to their dropout (MNAR, due to feeling better). These findings in contradictory directions (dropping out due to feeling better or feeling worse) illustrate a significant problem in the treatment of missing data: choosing unknowable assumptions regarding the cause(s) of missingness. In this case, the fact that PTSD scores for Pattern C were still high (52 is above the recommended PTSD cutoff criteria of 46) at immediate-post despite their substantial decrease will be taken to suggest that group C dropped after immediate-post due to *continued* distress, as indicated by other variables: nearly severe depression, high thought suppression, and high rumination. It should be recalled that lack of perceived improvement is an expected cause of dropout from clinical trials (Enders, 2010).

Scores at 14-day posts distinguished those who completed the entire study (Pattern A) from those who dropped out after the 14-day assessment (Pattern D). Specifically, those who omitted the final assessment (Pattern D) showed significantly lower PTSD symptoms, depression, stress, thought avoidance, rumination, and physical symptoms than group A at 14 days. This suggests these attriters (Pattern D) left the study due to feeling better, which is also an expected pattern in treatment studies. Once again, a decision must be made of whether to

estimate the missing PTSD scores using MNAR assumptions (as suggested by the finding that their PTSD symptoms improved to a significantly greater degree than group A) or to estimate them based on a method appropriate to the associated variables that suggest a MAR pattern.

Lastly, scores on all variables at 30-day post were not significantly different between the two groups who completed them (Patterns A and E). This supports the assumption that the missing 14-day scores for Pattern E may have been MCAR (not systemically dependent on other variables) since no significant distinguishing associations were found with those in Pattern A.

Estimating missing data. Maximum Likelihood Estimation. Given the above findings, the next question to be answered considered appropriate methods of imputing or estimating missing data from the scores of non-missing data. For missing data that fit an MAR or MCAR pattern, methodologists (see Enders, 2010) recommend the use of maximum likelihood estimation (MLE). MLE uses properties of the normal curve to estimate not specific missing scores but a series of possible combinations of scores which 'compete' until the most likely combination is achieved (requiring a number of iterations).

This technique was developed to capitalize on the fact that the area around the mean of a normal distribution is the tallest and densest part of the curve, such that there is a greater likelihood of randomly obtaining a score (from a normally distributed population) that is closer to the mean than one which is several standard deviations away from the mean (where density of scores is lower). Consider, for example, that the likelihood of meeting a random individual with an IQ of 100 is higher than meeting one with an IQ of 145. Yet without reference to a population distribution, such as the probability of drawing any particular card from a full deck, the probability is always the same (1/52 or .02). Using the normal distribution, mathematicians have studied the density of scores around the mean to create a "probability density function" that

allows estimation of probabilities of any given value and combination of values. To distinguish these normal-distribution-dependent probabilities from other probabilities they are generally called “likelihoods” (Enders, 2010).

When a sample of data is collected and normally distributed, MLE can be used to estimate *population* parameters that have the highest probability of producing the collected *sample*. Unlike imputing individual scores, MLE is concerned with the combined likelihoods of scores, which is a product of the individual likelihoods of each score (much like .02 x .02 = .0004 is the probability of drawing a king of spades twice from a deck of playing cards if the card is put back after each draw). Combinations of likelihoods can be estimated and tested against each other over a series of iterations until the one with the least error is found (i.e., best fitting a normal distribution).

Thus normality of distribution (and reduction of skew and kurtosis, as conducted above) is essential for using this technique. The distinguishing features of a normal distribution are its height and the shape of its curve (i.e., steepness of slopes), which are determined by the mean and standard deviation. When these are known, the estimation procedure proposes numerous value-estimates which are then combined and compared to the sample mean and variance until the best-fitting combination of estimates is achieved. This “best fit” is characterized by having a smaller rather than larger standard deviation (i.e., the least error) and with neither a skewed or leptokurtic shape.

Unfortunately, rarely is a population mean known *a priori*, nor its variance. Using sample data, MLE procedures can be used to estimate them, and thus provide estimates for missing data. This is possible because along the normal curve there is a point at which the slope is zero; this indicates the location of the mean and can be solved for mathematically. A second step is also

necessary since various distributions can have the same mean. The other slopes must also be calculated in a way that configures to a normal distribution, which is estimated for the population based on the error (i.e., variance) found in the observed sample and estimates that produce a best fit within a population assumed to have a normal distribution.

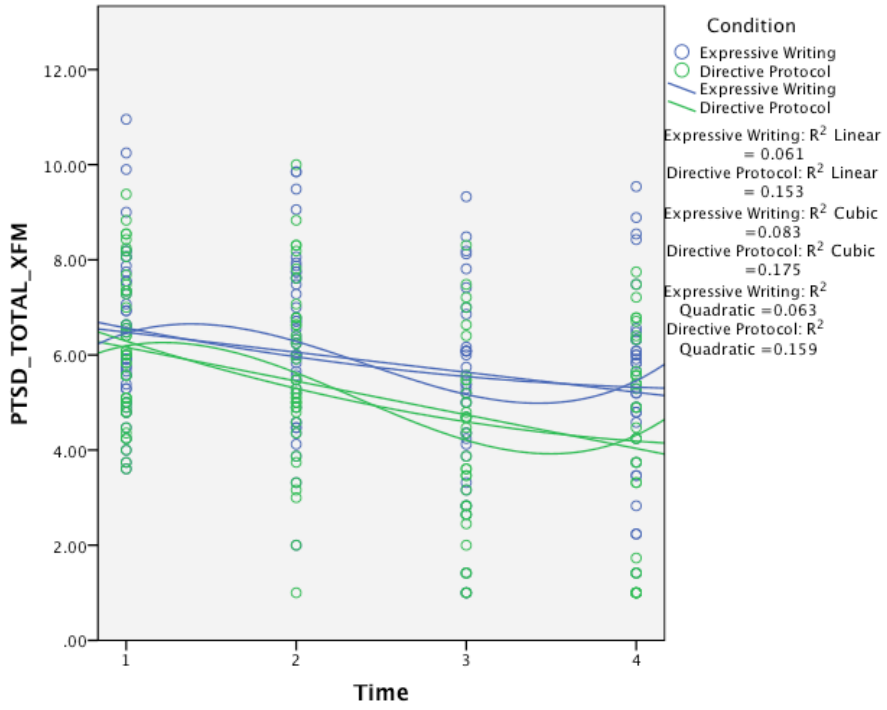
For the purpose of this study, MLE was implemented due to its less stringent dependence on the assumption of missing data mechanisms than other forms of estimation. After several consultations with a missing data methodologist, the evidence collected in the present study was not deemed sufficient to establish an MNAR mechanism (Enders, personal communication, 3/4/15). In addition, the auxiliary variables identified above were included as covariates, although only from pre-test since the other time periods follow the same missing data pattern as the main outcome variable.

As an aside, when calculated in multivariate space, instead of a single mean and variance being estimated, values and variances are estimated in vectors and matrices (Enders, p. 73). The structure of the matrices then becomes another aspect of data interpretation, and 'best fit' involves comparing results obtained from various potential structures. The standard test used to assess the best-fitting structure is called the Likelihood Ratio Test, which is a chi-square test that compares models based on whether improvement in the model (i.e., reduction of error) achieves statistical significance. Significance is determined using the number of additional parameters in a subsequent model as the degrees of freedom in examining whether the size of the difference meets or exceeds the critical value on a chi-square distribution table. The difference value examined for this test is simply the difference in error between the models. Due to mathematical properties, error variances are converted to natural logs for greater accuracy, and in comparing models for significant improvement the natural log value produced by one model is subtracted

from the natural log yielded by the previous model. SPSS procedures yield the natural log values of each model but their comparison must be conducted by hand. These techniques were used in the present study to increase the generalizability of findings. In particular, removing the constraint that intercepts and slopes be set as fixed rather than allowed to vary per participant and over assessment intervals was examined as possibly better fitting models. (For complete explanations for comparing models see Enders, 2010; Hayes, 2006; Kline, 2011.)

Linearity. The final data preparation step was to ensure that linear modeling methods would be appropriate. Figure 3 illustrates observed scores (transformed) for total PTSD symptoms at pre-test, immediate post, 14-day post, and 30-day post. As can be seen, for both treatment groups a cubic model (i.e., curved line with two turning points) produced a better fitting model (R^2 = .08 for the Expressive Writing condition, R^2 = .18 for the Directive Protocol) than a linear (R^2 = .06 and R^2 = .15, respectively) or quadratic (R^2 = .06 and R^2 = .16, respectively) model.

Figure 3. *Linear, Quadratic, and Cubic Models of Observed (Transformed) PTSD Scores at Pre- and Three Posts.*



PTSD_TOTAL_XFM = the transformed observed scores for total PTSD symptoms using the MPSS-SR. Time = pre-test, immediate post, 14-day post, and 30-day post. This graph only utilizes observed scores per assessment period with no estimation for missing scores.

However, to compare whether the improvement of a cubic model over a linear model was significant, a hierarchical regression was run using the original assessment interval as the predictor at Step 1 and the assessment interval cubed as the predictor at Step 2. Table 6 summarizes the results for model significance as well as significance of the change at Step 2. Both models were significant for each condition, but the improvements in variance explained (i.e., R-square change) were not significant at Step 2. In other words, the cubic model did not significantly improve upon the linear model for either condition.

Table 6. *Significance of Linear and Cubic Models Predicting PTSD Symptom Scores Across Time Intervals, Based on Treatment Condition.*

		df	*F*	*P*	R-Square	F Change	Signif F Change
Expressive Writing	Step 1	1, 155	10.00	.002	.06	10.00	.002
	Step 2	2, 154	5.36	.006	.07	0.72	.398
Directive Protocol	Step 1	1, 147	95.07	< .001	.15	26.66	< .001
	Step 2	2, 146	13.95	< .001	.16	1.20	.275

When the variable entry-order was reversed, the cubic model alone explained less variance than the linear model alone (5% and 12% of the variances in PTSD symptoms, for EW and DP, respectively). Entering the linear term at Step 2 improved the cubic model by a marginally significant 2% for the EW condition (p = .077) and by a significant 4% (p = .009) for the DP condition. Thus, analyses that assume linearity are most appropriate. [In anticipation of further analyses, note that the difference in effect size is quite notable (R = .24, d = 0.49) for EW, R = .39, d = 0.85 for DP). However, these results are biased toward study completers since MLE was not yet implemented; nor do these regression analyses control for correlations between repeated measures.]

Treatment delivery, consistency, and fidelity.

Several strategies were used to increase the likelihood that participants received their treatment interventions in the same manner and dosage regardless of experimenter or other variables such as drift from protocol. First, both conditions used scripted protocols that were literally read to participants. These were not only read aloud by the researcher but the participant was asked to read along on a copy given to them (which was collected at the end to avoid them sharing the protocol with other potential participants). In addition, researchers followed a detailed procedural checklist to ensure they greeted participants with warmth (including eye

contact); delivered the protocols consistently; and recorded the session durations, break durations, and the SUDS scores throughout. There was variability in timing of SUDS requests (with a mean of every 7 minutes) but no missing data.

Sessions were videotaped and 45 (52%; 27 in the A condition and 18 in the B condition) of them were reviewed by three trained raters (two independently rating each tape) who were blind to the study hypotheses. Possible scores were 0 (Not at all/No), 1 (Somewhat), or 2 (Very much/Yes) in the three domains of experimenter warmth, clarity of delivery, and understanding by participants. Experimenter warmth was rated six times (i.e., three at the beginning [including eye contact and readiness to begin], once after each break, and one at the end); clarity of experimenter instruction was rated three times (i.e., during instructions at the beginning of each intervention period); and participant reception/understanding was rated at three times (i.e., in response to instructions at the beginning of each intervention period).

Rater agreement was 100% for all clarity and reception/understanding scores, with the highest possible ratings (6 out of 6) scored for each domain for each administration. In eight cases raters disagreed by 1 or 2 points on the sum of warmth scores (82% agreement); nevertheless, warmth scores were never less than 9 out of the possible 12, and thus total coding scores were no less than 21 out of 24. Thus raters overwhelmingly agreed that researchers provided administrations with similarly high degrees of warmth, clarity, and receptivity. There was no significant difference in coders' mean ratings by condition (see Table 7 which summarizes sample characteristics).

Researchers reported deviations from protocol on the protocol checklists. In Condition A there was only one deviation; a participant becoming nauseous during her first writing period resulting in an early break; this was offset by a longer middle writing period to ensure

comparable overall treatment duration. In Condition B, one administration was terminated (and other assessments provided) due to the participant discussing severe suicidal ideation; despite the lack of full treatment dosage administered, this case was retained in the intent-to-treat analyses. In one other case a participant from the community refused to receive her randomized condition (A) and was administered Condition B; this case was retained as randomized of the intent-to-treat analyses.

Given the nature of the treatment, administrations of Condition B varied abundantly from Condition A because of the application of the worksheets to each particular case, which involved discussion, feedback, and some clinical judgment; in Condition A the researcher did not read, discuss, or provide feedback regarding what participants wrote. This difference was planned as it was the goal of this study to test whether participants would benefit more from a novice therapist armed with highly directive worksheets than they would from the sparsely instructed written narration of their traumatic event. The potential variability in Condition B resulted in administration times ranging from as few as 84 minutes to as many as 115, which was seen in the first five administrations of condition B. This variability created a potential confound (i.e., treatment duration) regarding comparability between conditions. For this reason the PI decided to extend writing periods in Condition A from 25 minutes to between 30-35 minutes, resulting in total durations of 90-105 minutes for Condition A.

Overall, the mean duration for Condition A was 97.16 minutes (SD = 6.81 min). For Condition B, mean duration was 97.29 minutes but with a much larger variance (SD = 18.43 min). An independent samples *t-test* showed a significant difference in variance (Levene's test; $F = 22.87$, $p < .001$); thus degrees of freedom were adjusted from 84 to 51.56 and equal variances not assumed. With equal variances not assumed, the mean difference in treatment duration

between conditions was not significant ($t(51.56) = -0.04$, $p = .967$). Given the comparable and high fidelity ratings by trained video coders blind to the study hypotheses, the use of written instructions for every exercise, the completion of detailed procedural checklists, and the comparable treatment durations, this evidence suggests that participants in each condition received comparable and faithful administrations of their treatment conditions.

Sample characteristics. The resulting sample was primarily drawn from undergraduates in psychology courses during the spring, summer, or fall of 2014. It consisted of 18 men and 68 women; 94% described themselves as heterosexual. Regarding race/ethnicity, 75% self-identified as White/Caucasian, 15% as Black/African, 5% as Latino/Hispanic, and the remainder as Asian, Multiracial, or Other. Three participants were older than 40, with 67% aged 18 or 19, and 31% aged 20-24. Ninety-three percent endorsed being single/never married, with the remaining being married (1), living with a romantic partner (2), divorced (2), or preferring not to say (1). Regarding religious background, 8 said atheist or "none", 1 wrote in Hindu, the remaining wrote in a form of Christianity. Sixty percent endorsed religious activity at least once per week, and 17% said "never". Using number of rooms in their parents' home as a proxy for socioeconomic status, the mean number reported was 6.86 (median = 7). According to the U.S. Census Bureau (2000), the median for that region of the U.S. is 5.3 rooms, suggesting this sample was above the median in SES. Regarding parental education, 60% said their mother had at least a bachelor's degree; 57% said the same of their father (although men had more doctorates (10% v. 3%). Of the 50% who endorsed employment-related activity, 22% said they were working part-time and 28% said they were looking for work. Forty-eight percent said they were part of a fraternity or sorority.

Table 7 summarizes sample characteristics by treatment condition. All but three participants were aged 18-24; one reported age 42 (Condition A), another 55 (Condition A for the intent-to-treat analysis, but received the Condition B treatment); and the third was 62 (Condition B). SES as determined by housing size differed by condition; it was significantly higher in Condition B.

Table 7. *Sample Characteristics per Treatment Condition, with Significance Tests*.

		Condition A Expressive Writing	Condition B Directive Protocol	Chi-Square or t-statistic	*P*
Sex	**Female**	35 (41%)	33 (38%)	$\chi^2(1, N = 86) = 0.91$	.561
	Male	9 (10%)	9 (10%)		
Age	**Median**	19	19		
	Mean	20.48 (6.47)	20.40 (6.73)	$t(84) = 0.05$	.959
Sexual Orientation	**Heterosexual**	40 (47%)	41 (48%)	$\chi^2(3, N = 86) = 4.97$	.174
	LGBT	1 (1%)	0 (0%)		
	Not Sure	3 (4%)	0 (0%)		
	Rather Not Say	0 (0%)	1 (1%)		
Marital Status	**Single/Never Married**	40 (47%)	39 (45%)	$\chi^2(4, N = 86) = 4.97$	.291
	Married	2 (2%)	0 (0%)		
	Single/Living with Partner	0 (0%)	2 (2%)		
	Divorced	1 (2%)	1 (2%)		
	Prefer not to say	1 (2%)	0 (0%)		
Racial/Ethnic Background	**Black/African**	6 (7%)	6 (7%)	$\chi^2(5, N = 86) = 3.97$	.554
	White/Caucasian	32 (37%)	33 (38%)		
	Latino/Hispanic	3 (4%)	1 (1%)		
	Multiracial	1 (2%)	1 (2%)		
	Other	2 (2%)	1 (2%)		
	Minority Total	12 (28%)	9 (21%)	Compared to Majority $\chi^2(1, N = 86) = 0.53$	.353
Socioeconomic Status	**Mean/Median Bedrooms + Bathrooms**	6.36 / 6	7.38 / 7	$t(84) = -2.21$	.030
	Mother with Min. Bachelor's Degree	23 (27%)	29 (34%)	$\chi^2(8, N = 86) = 8.28$	.407
	Father with Min. Bachelor's Degree	35 (30%)	25 (29%)	$\chi^2(8, N = 86) = 8.28$	.506
Mean Treatment Duration	**(in minutes)**	97.16	97.29	$t(51.56) = -0.04$	.967
Researcher	**Principal Investigator**	32 (37%)	30 (35%)	$\chi^2(1, N = 86) = .018$	.893
	Research Assistant	12 (14%)	12 (14%)		
Fidelity Ratings	**Mean between 2 Raters (*SD*)**	23.74 (0.56)	23.60 (0.72)	$t(39) = 0.69$	.496

Table 8 summarizes PTSD symptomatology at each assessment interval, and types of trauma reported. The two groups did not significantly differ in their level of PTSD symptoms at pre-test or immediate post. Significant differences were evident, however, at the 14- and 30-day follow-ups (among completers). Regarding types of trauma experienced, the groups were evenly represented. When reduced to more general categories than those of the Life Events Checklist, participants could be grouped into those who had suffered an unwanted sexual experience (EW = 15, DP = 14); the death of a close loved one (EW = 10, DP = 8); a life-changing illness or injury of someone close or oneself (EW = 9, DP = 10); and physical violence or non-sexual abuse (EW = 10, DP = 10). PTSD diagnosis was not assessed or required for inclusion in the study. Nevertheless, when the MPSS-SR cut-off score of 46 was applied to pre-test scores (Falsetti et al., 1993), more than a third in each condition met criteria [EW = 17 (39%), DP = 14 (33%)]. At final post 10 people per group no longer met criteria although one person in the EW condition who had not met criteria at pre-test did at final post [EW = 8 (18%), DP = 4 (10%)].

Table 8. *Sample Characteristics per Treatment Condition, with Significance Tests, for Observed PTSD Symptom Scores and Trauma Types.*

		Condition A Expressive Writing	Condition B Directive Protocol	Chi-Square or t-statistic	*P*
Mean PTSD Symptom Scores at each Assessment Interval (MPSS-SR)	**Pre-Test (*SD*)**	43.39 (23.93)	39.74 (19.90)	$t(84) = 0.77$	.445
	Immediate Post (*SD*)	40.91 (21.98)	34.37 (21.77)	$t(80) = 1.35$	.181
	14-Day Post (*SD*)	29.76 (20.30)	20.30 (17.45)	$t(68) = 2.04$	.046
	30-Day Post (*SD*)	31.57 (21.10)	22.70 (18.03)	$t(66) = 1.86$	.067
Trauma Categories (Met PTSD Cut-Off at Pre-Test, Post)	**Sexual Assault or Attempt**	8 (4, 2)	9 (5, 2)		
	Death of Someone Close	9 (4, 1)	8 (3, 1)		
	Other Unwanted Sexual Experience	5 (2, 0)	3 (3, 1)		
	Life Changed by Injury or Illness	4 (1, 1)	5 (1, 0)		
	Domestic Violence	1 (0, 0)	1 (0, 0)		
	Abusive Father	6 (0, 0)	5 (1, 0)		
	Natural Disaster	0	1 (0, 0)		
	Motor Accident	1 (1, 0)	1 (0, 0)		
	Physical Assault	1 (0, 0)	3 (0, 0)		
	Combat Exposure	1 (1, 1)	0		
	Severe Suffering or Violent Death	2 (2, 1)	0		
	Other Stressful Experience	6 (2, 2*)	6 (1, 0)		
	TOTAL	44	42		

* One individual whose mother had abandoned the family went from not meeting criteria for PTSD to meeting it at final follow-up; one of the two who originally met criteria no longer did so at follow-up.

Covariates. Given the significant difference in SES between conditions, this variable was entered as a covariate in analyses. As discussed above, the auxiliary variables found to be associated with missingness groups were also included to improve the MLE process. They were the measures of thought suppression (WBSI), depression, anxiety, stress (DASS-21), physical symptoms (PILL), rumination (RRS), and alexithymia (TAS-20). Treatment duration was also considered a potential source of differences between the conditions and so it was included as well. Each of these covariates was first "centered" around its mean so that interpretation would be straightforward as scores moved away from the mean, as recommended by methodologists (Enders, 2010; Hayes, 2006).

It was also hypothesized that other factors could influence results such as new traumatic events since involvement in the study; increases in talking about the event with others or writing about it; and participation in therapy/counseling. Each of these were assessed at each time point. However, when explored for correlations with symptoms at pre- and post, none of these variables showed any significant associations and thus were omitted as covariates.

Primary intent-to-treat (ITT) analysis. The main hypothesis for this study was that the directive protocol (DP) condition would show significantly greater reduction in PTSD symptoms (assessed by the MPSS-SR) than the EW condition. This analysis was conducted using the MIXED procedure in SPSS (v. 20). This procedure was chosen primarily to avoid the pairwise deletion of cases with missing data, which occurs automatically with ANOVA. In addition, this procedure improves accuracy over ANOVA because it allows for the separation and analyses of fixed and random effects. Fixed effects are variables whose values are known or assigned such as treatment condition and assessment intervals. Random (or simply unconstrained) effects quantify

unknown effects such as variance within and between participants, researchers, time intervals, and treatment location (Littell, Pendergast, & Natarajan, 2000).

The dependent variable was total PTSD symptoms (MPSS-SR, transformed as explained above). Fixed effects entered into the analysis were the treatment condition (i.e., EW or DP), and the assessment intervals (Time 1, 2, 3, 4; i.e., pre-test, immediate post, 14-day post, and 30-day follow-up). In addition, as a covariate SES was entered as a fixed (i.e., unchanging) effect due to its significant mean difference between treatment groups. As discussed above, it was first mean-centered, a technique by which the mean is subtracted from each score so that the mean takes on a zero value and addition or subtraction from the mean is more easily interpreted (Hayes, 2006). Treatment duration was also entered as a covariate due to potential influence on outcomes. Lastly, the auxiliary variables discussed above were also entered as covariates after mean-centering (i.e., pre-test [transformed] scores for thought suppression, depression, anxiety, stress, physical symptoms, rumination, and alexithymia). All of the above fixed effect variables constituted Model 1; random effect variables were entered as subsequent models and compared with the previous model to determine significant improvement. Specifically, Model 2 allowed for varied intercepts based on unique participant differences, and Model 3 allowed for random slopes (i.e., rate of symptom change across time) in addition to random intercepts.

Identifying the best-fitting model. Rather than report the numerous results generated, results have been limited to the best-fitting model. To determine whether Model 2 (i.e., incorporating fixed and random effects) was significantly better-fitting than Model 1 (i.e., fixed effects only model), methodologists recommend using the Likelihood Ratio (LR) test. This test compares the total variance unexplained in each model (i.e., error), which is quantified by the "information criteria" (IC) generated by the MLE process; this quantifying of variance is akin to

summing the Ordinary Least Square distances as calculated in ANOVAs. Bozgodan's Information Criterion (CAIC) is recommended for small sample sizes to adjust for related error. In the LR test, CAICs are compared from one model to another by their chi-square distributions, with degrees of freedom determined by the number of parameters added to the original model. The null hypothesis is that the less constrained model (i.e., Model 2 in the present study) will not differ from the constrained model (i.e., Model 1; Kline, 2011).

In the present study, the CAIC for Model 1 was 1259.77, with 19 parameters entered in the model. The CAIC for Model 2 was 1195.56, with 20 parameters in the model. The difference of 64.21 was well beyond the critical value (10.83; $p < .001$) for a chi-square analysis with a difference of one degree of freedom. This suggests allowing for the random intercept provides a better-fitting model. Next, Model 3 was considered in which the slope (rate of change over time per participant) was also allowed to vary. This showed a CAIC value of 1202.28 with 21 parameters. The difference of increasing the amount of unaccounted error by 6.72 (compared to the previous model) suggests that Model 2 provided a better fit than Model 3.

Significance test results for the fixed effects entered into Models 1 and 2 are summarized in Table 9. Four covariates (i.e., thought suppression, anxiety, acceptance, and rumination) were significant predictors of PTSD symptoms in Model 1, but their effects were reduced to non-significant levels when intercepts were allowed to vary between participants (Model 2). In addition, Model 2 showed significant effects for time and treatment condition, and the interaction of time and treatment condition approached significance.

Table 9. *Significance of Fixed Effects in Models 1 and 2 in Predicting PTSD Symptoms*.

	Model 1			Model 2		
Variable	***df***	***F***	***p***	***df***	***F***	***p***
Covariates						
SES	1, 306	0.01	.953	1, 90.31	0.07	.793
Thought Suppression	1, 306	4.35	.038	1, 88.21	1.77	.186
Depression	1, 306	2.33	.128	1, 87.21	0.82	.367
Anxiety	1, 306	4.49	.035	1, 89.25	2.50	.118
Stress	1, 306	0.08	.774	1, 88.06	0.02	.889
Acceptance	1, 306	4.92	.027	1, 93.38	2.95	.089
Physical Symptoms	1, 306	0.04	.844	1, 84.86	0.01	.950
Alexithymia	1, 306	0.07	.793	1, 91.56	0.01	.944
Rumination	1, 306	4.35	.038	1, 88.35	2.19	.143
Treatment Duration	1, 306	0.01	.935	1, 89.36	0.51	.477
Assessment Intervals (Time)	3, 306	19.61	< .001	3, 227.01	35.95	< .001
Condition	1, 306	19.99	< .001	1, 86.84	9.60	.003
Time x Condition	3, 306	1.03	.378	3, 226.93	2.45	.064

Figure 4 depicts trajectories of PTSD symptom changes, with marginal means, effect sizes, and statistical tests summarized in Table 11.

Figure 4. *Estimated Trajectories of the PTSD Symptom Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

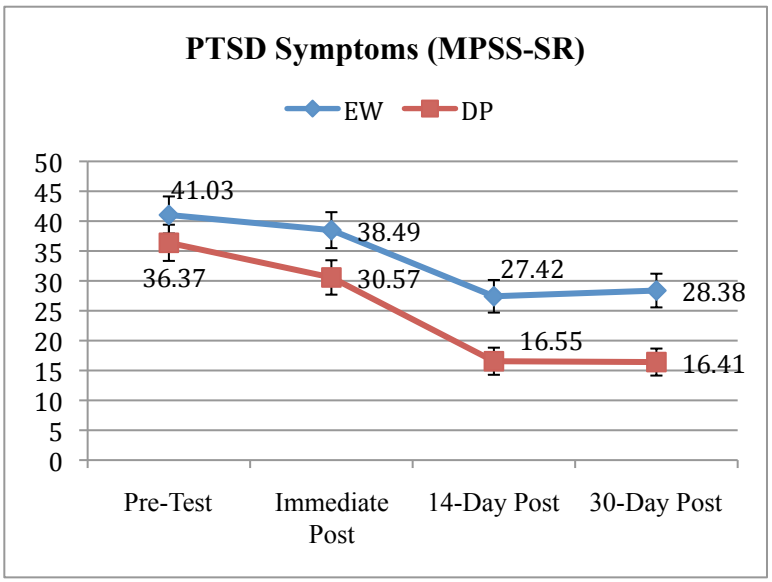


Table 10. *Estimated PTSD Symptom (MPSS-SR) Outcomes as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
PTSD Symptoms (MPSS-SR)	**Baseline (SE) 95% CI**	41.03 (3.10) 35.23 to 47.26	36.37 (3.03) 30.74 to 42.45	41.03 (3.10) 35.23 to 47.26	36.37 (3.03) 30.74 to 42.45	41.03 (3.10) 35.23 to 47.26	36.37 (3.03) 30.74 to 42.45
	Post (SE) 95% CI	38.49 (3.01) 32.88 to 44.54	30.57 (2.88) 25.26 to 36.37	27.42 (2.73) 22.42 to 32.91	16.55 (2.27) 12.48 to 21.16	28.38 (2.82) 23.20 to 34.05	16.41 (2.26) 12.35 to 20.99
Effect Size Within Tx Group	***d***	-0.27	-0.58	-1.46	-2.12	-1.31	-2.12
	LMM	B = -2.58 t_{117} = -0.88, P = .382	B = -5.95 t_{109} = -1.86, P = .066	B = -13.81 t_{119} = -4.78, P < .001	B = -19.99 t_{110} = -6.78, P < .001	B = -12.76 t_{119} = -4.30, P < .001	B = -20.01 t_{110} = -6.80, P < .001
Effect Size Between Tx Groups	***d***	0.18		0.45		0.51	
	LMM	B = 3.71 t_{224} = 0.84, P = .402		B =10.07 t_{228} = 2.08, P = .038		B = 11.54 t_{228} = 2.35, P = .020	

Marginal mean scores are the estimated means adjusted by the covariates of SES, thought suppression, anxiety, rumination, acceptance, depression, stress, physical symptoms, and duration of treatment; these and between group effects were calculated with the entire sample. Within-Group effect sizes were then generated separately per condition.

As can be seen, the DP condition showed marginally significant reductions in PTSD symptoms at immediate post; and both conditions showed statistically and clinically significant reductions in PTSD symptoms at 14-days post which were largely maintained at 30-day follow-up. Overall, these findings suggest that participants in both conditions benefitted considerably from the intervention they received, and that those in the DP condition benefitted significantly more than those in the EW condition. Table 11 summarizes the fixed effect estimates.

Table 11. *Fixed Effect Estimates and Tests of Significance Under Model 2 for PTSD Symptoms*.

	Unstan-dardized Estimate (*b*)	SE	95% CI		*df*	*t*	p
Intercept[a]	36.65	3.02	31.01	42.73	193.16	25.39	< .001
Covariates							
Mean SES	-0.21	0.80	-7.26	7.57	90.31	-0.26	.793
Thought Suppression	2.32	1.79	-0.15	4.87	88.21	1.33	.186
Depression	2.99	3.43	-8.77	16.75	87.21	0.91	.367
Anxiety	5.27	3.51	-6.82	19.36	89.25	1.58	.118
Stress	-0.50	3.63	-12.25	13.48	88.06	-0.14	.889
Acceptance	-7.37	4.19	-10.11	-4.49	93.38	-1.72	.089
Physical Symptoms	-0.09	1.52	-8.41	9.26	84.86	-0.06	.950
Alexithymia	0.22	3.15	-10.83	13.17	91.56	0.07	.944
Rumination	3.61	2.54	-6.73	15.44	88.35	1.48	.143
Treatment Duration	0.02	0.12	-5.83	6.36	89.13	0.14	.891
Assessment Interval[b]							
Immediate Post	-5.82	2.95	-15.93	6.21	226.42	-1.93	.055
14-Day Post	-19.91	2.33	-27.37	-10.43	229.35	-7.17	< .001
30-Day Post	-20.05	2.32	-27.47	-10.61	229.48	-7.24	< .001
EW Condition[a]	4.68	4.61	-9.03	21.07	187.42	1.07	.284
EW x Interval[c]							
EW Immed. Post[c]	3.71	4.65	-9.97	20.13	224.45	0.84	.402
EW 14-Day Post[c]	10.07	5.25	-5.15	28.19	227.95	2.08	.038
EW 30-Day Post[c]	11.54	5.38	-4.00	30.03	228.11	2.35	.020

[a]The intercept represents the baseline (pre-test) score for the DP condition. To calculate the intercept for the EW condition, simply add the beta coefficient for the EW Condition (i.e., 36.65 + 4.68 = 41.33). [b]Per-assessment interval coefficients can be added to the intercept to calculate values for the DP condition at each interval. [c]These values represent the *difference* in EW effect sizes for that assessment interval as compared to the DP condition at the same interval.

In terms of effect size reported in confidence intervals, from pre-test to 30-day follow-up, these results suggest with 95% confidence that participants in the DP condition saw reductions in PTSD symptoms of between 11 and 27 points (b = -20.05). In contrast, for the EW condition we can be 95% confident that changes ranged from improving by 30 points *less* and up to 4 points *more* than participants in the DP condition ($b_{difference}$ = 11.54 fewer points of symptom reduction).

Again, this difference was significant (p = .020). These differences in confidence interval can be difficult to interpret. When the EW condition was coded as the base group, the 95% CI for improvements at 30 days ranged from 1 to 22 points (b = -12.71) of symptom reduction. In contrast, the DP condition showed an average of 10.65 more points of symptom *reduction* (p = .020), with a 95% CI ranging from 22.73 points of *more* symptom reduction to 4.32 points of *less* symptom reduction than the EW condition.

In addition to the fixed estimates, the random effects due to participant differences were significant (as shown by the likelihood ratio test discussed above which suggested Model 2 significantly improves upon Model 1 in fitting the data). The estimate of the error variance per person combines unique per-individual variance around their individual intercept (b = 10.07; SE = 2.36; 95% CI = 23.07 to 32.52) as well as around their individual best-fit line (b = 12.38; SE = 1.34; 95% CI = 26.65 to 31.91). Since variance is the square of the standard deviation, the square root of 10.07 (i.e., 3.17) represents the standard deviation. This indicates that with 68% confidence that individual intercepts fell within 3.17 points of the intercept, or 95% confidence that they fell within an interval of +/- 6.34 points. In addition, individual variation around the best-fit line (i.e., around scores at the various assessment points) varied by 2 standard deviations (for 95% confidence) of the residual variance (2 x the square root of 12.38), or +/-7.04 points. These individual-based differences overlapped with the variations in thought suppression, depression, anxiety, rumination, and acceptance.

Repeated measures (non-ITT) analysis. For comparison, the primary outcome was also conducted using a repeated measures ANOVA with only the pre-test and one post-test score entered. To reduce the number of cases excluded, the latter was calculated as the mean of the 14- and 30-day posts. The person who did not accept randomization was grouped with her actual

treatment group (i.e., DP), and the participant who only received an incomplete administration was dropped from the analysis. These preparatory steps resulted in 40 participants in the EW condition and 38 in the DP condition. This analysis showed significant symptom reduction regardless of treatment condition ($F(1, 76) = 60.59$, $p < .001$; *Partial Eta*^{2} = .444, $r = .67$, $d = 1.81$). In addition, the reduction in PTSD symptom score by the DP participants was significantly larger than that of the EW condition ($F(1, 76) = 4.79$, $p = .032$; *Partial Eta*^{2} = .059, $r = .24$, $d = 0.50$).

When the repeated measure ANOVA effects were examined by condition, the EW condition showed *Partial Eta*^{2} = .328, $r = .57$, and $d = 1.39$. For the DP condition, *Partial Eta*^{2} = .529, $r = .73$, and $d = 2.12$. These were similar to the effect sizes reported in the ITT analysis ($d_{EW} = 1.31$, $d_{DP} = 2.12$). Mean symptom point reductions were also roughly the same as in the ITT analysis (EW = 11.99; DP = 18.96). Both analyses suggest sizable reductions in reported symptom distress, with notably stronger effects demonstrated by the DP condition.

Discussion of the primary outcome analyses. The main hypothesis of this study was that the DP condition would result in larger PTSD symptom reduction than the EW condition. Results showed that as a whole, participants in both conditions improved by a mean of at least 12 points on the measure of PTSD symptoms utilized, and maintained gains reported at 14-days-post-intervention for another two weeks. These findings also suggest that on average, participants in the DP condition improved by an additional mean of nearly 7 points in symptom reduction. Given the ubiquity of traumatic events and the likelihood of PTSD symptoms limiting functionality in the general population, this evidence suggests that these two low-cost treatments, which can be administered in under two hours and require minimal therapist training, could be

made available in numerous settings such as short-term primary care inpatient units and high school and college counseling centers.

However, as a cautionary note, the EW results should not be expected to generalize if reduced to the advice of, “try journaling”. Rather, generalization is predicated on the same detailed protocols being read aloud as well as provided in writing to patients; protocol administrators interacting with warmth; and sessions being timed and separated by breaks.

In addition to overall PTSD symptoms, this study also involved secondary analyses of the impact of these treatments on the frequency and intensity of PTSD symptoms; potential effects for individuals who meet diagnostic criteria for PTSD; other symptoms such as depression and physical illness; and on attitudes and processes theorized to influence PTSD symptoms.

Secondary analyses. PTSD symptom frequency and severity. Mixed effect analyses were also conducted for the frequency and intensity subscales of the MPSS-SR. As with the total MPSS-SR scale, Model 2 (i.e., allowing for random intercepts) showed the best fit for both subscales. Regarding frequency of PTSD symptoms from pre-test to 30-day post, results suggest with 95% confidence that participants in the DP condition saw significant reductions of between 3.75 and 15.43 points (b = -9.12; $t(229.39) = 6.99$, $p < .001$). For the EW condition, results showed a significant ($t(232.10) = 3.43$, $p = .001$) difference from the DP condition of 4.09 fewer points of improvement, with 95% confidence that reductions in PTSD symptom frequency were between 0.30 and 7.13 points fewer than those in the DP condition.

Regarding severity of PTSD symptoms from pre-test to 30-day post, results suggest with 95% confidence that participants in the DP condition saw significant reductions of between 3.48 and 18.23 points (b = -10.17; $t(228.83) = 6.35$, $p < .001$). For the EW condition, results showed a non-significant ($t(227.47) = -1.31$, $p = .192$) difference from the DP condition of 2.26 fewer

points of symptom reduction, with 95% confidence that changes in PTSD symptom severity were between 6.69 points of less symptom reduction to 4.14 points of greater symptom reduction than those in the DP condition.

PTSD Cut-Off Scores. The MPSS-SR has been demonstrated to predict PTSD diagnoses with 93% accuracy in a community sample using a cut-off score of 46 (Falsetti et al., 1993). In the present study, that cut-off score was used to classify individuals at baseline and post (Table 12). Chi-square analyses showed no significant differences between treatment conditions at pre-test χ^2 (1, N = 86) = 0.45, p = .500 nor at final classification χ^2 (5, N = 84) = 2.70, p = .747.

Table 12 also summarizes mean symptom changes between baseline and 30-day follow-up. In terms of symptom changes, those who no longer met PTSD cut-off score at post showed mean symptom reductions of between 19 and 36 points. The next largest improvements ($M\Delta$ = -19) were seen by those whose symptoms decreased but whose baseline scores had not been severe enough to meet the cut-off criterion. Showing a different pattern, those who met the PTSD cut-off score at both pre- and final post also showed mean reductions in symptom scores but of an average reduction of only 5-10 points. Similar reductions were found in the control group of a treatment study with women with comorbid PTSD and panic disorder (7-11 points; Falsetti, Resnick, & Davis, 2008), suggesting these individuals may not have benefitted very much from either intervention.

Among those not initially meeting the PTSD cut-off score, one person showed potential reclassification at post. However, her trauma would not have met DSM-5 criteria; it was the disturbing experience of abandonment by her mother. The increase in symptoms may be indicative that this type of traumatic experience is less amenable to treatment by EW. Lastly,

both treatment conditions showed comparable numbers of participants whose symptom scores ended close to their baseline, and of increases in symptom scores.

Table 12. *Participants Categorized by Pre-Test PTSD Classification at Pre-Test and Post, with Mean Score Differences from Pre-Test to 30-Day Follow-Up*.

	EW	**DP**
Met PTSD Cut-Off at Pre-Test	17	14
1. Retained PTSD Classification	7 ($M\Delta$ = -9.71, SD = 20.13)	4 ($M\Delta$ = -12.75, SD = 10.78)
2. Lost PTSD Classification	10 ($M\Delta$ = -19.50, SD = 8.82)	10 ($M\Delta$ = -35.70, SD = 17.30)
3. Gained PTSD Classification	1 ($M\Delta$ = 23.00)	0
Did Not Meet PTSD Cut-Off at Pre-Test	26	29
4. No Changes in Symptoms	4 ($M\Delta$ = -0.75, SD = 0.96)	6 ($M\Delta$ = -0.83, SD = 0.98)
5. Increased in Symptoms	6 ($M\Delta$ = 7.83, SD = 2.64)	4 ($M\Delta$ = 6.75, SD = 2.36)
6. Decreased in Symptoms	15 ($M\Delta$ = -19.07, SD = 9.26)	17 ($M\Delta$ = -19.88, SD = 8.41)

Discussion of secondary PTSD symptom score analyses. There was no hypothesis about the effects of either treatment on symptom frequency or severity. These results showed that the DP intervention reduced the *frequency* of PTSD symptoms to a significantly better degree than the EW condition, and that the significant reductions both groups showed in symptom *severity* were not significantly different based on treatment condition. This suggests the DP condition may be enacting different or additional processes than the EW condition which affect frequency. Of course, the MPSS-SR is a self-report measure, so the change may be better described as a reduction in *perceived* frequency. This distinction is offered because the development of the DP sought to reduce the *perception* of thoughts and reminders about the trauma as dangerous or harmful, and to thereby reduce avoidance and suppression of them. It may be that the reduction in factual or perceived frequency was associated with a greater willingness to experience reminders and a reduction in (hyper)vigilance towards them.

The finding that the two treatments had comparable effects on perceived *severity* of symptoms could be interpreted as evidence for habituation, which is generally defined as decreasing levels of arousal in response to a given stimulus. Of course, there would also be habituation present if the reduction in frequency of symptoms were due to reductions in perceiving or registering trauma-related stimuli but this cannot be known from self-reports.

The results regarding PTSD cut-off scores were mixed. Clearly the DP group saw greater symptom reductions regardless of whether their symptoms fell below the cut-off score. Yet the percentages of loss of PTSD classification were not large enough to consider the DP a stand-alone treatment. In addition, the gains from EW and its greater ease of implementation may make it more recommendable in many settings. This would particularly be the case if analyses could better discriminate processes that distinguished the much-improved groups from those that reported only marginal improvement, no change, or worsening of symptoms. Potential process variables will be explored in analyses below after the analyses of depression and physical illness symptoms.

Depression. This study hypothesized that the DP condition would be associated with greater decreases in depressive symptoms than the EW condition. First, it should be noted that the baseline scores for depression in this sample were only in the mild range; scores in the 0-4 range indicate normal functioning, 5-6 suggest mild depression, and 7-10 suggest moderate depression (Lovibond & Lovibond, 1995). Thus, not much change was anticipated.

As in the primary outcome analyses, SES and treatment duration were entered as covariates to control for their effects, and the same mean-centered auxiliary variables as above (except with baseline PTSD scores entered in place of baseline depression scores) were entered as covariates to improve the MLE process. Using a fixed effects model yielded a CAIC of 761.01

(Model 1). By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 734.12 ($\chi^2(1, N = 86) = 26.898, p < .001$). The addition of a random effects per assessment interval did not improve the model (Model 3 CAIC = 740.833, which is a worse fit than the previous, although a significantly better fit than the only fixed effects model). Thus Model 2 effects are reported, which includes fixed and random effects.

A graphical depiction of symptom score trajectories are presented in Figure 5, with marginal means per interval per condition summarized in Table 13 (mean scores are adjusted by the covariates of SES, duration of treatment, total PTSD symptoms, thought suppression, anxiety, rumination, acceptance, stress, and physical symptoms). The EW condition did not show significant or stable change, while the DP condition showed a significant decrease in depression scores that continued to decrease at 30 days.

Figure 5. *Estimated Trajectories of Depressive Symptom Scores (DASS-21) as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

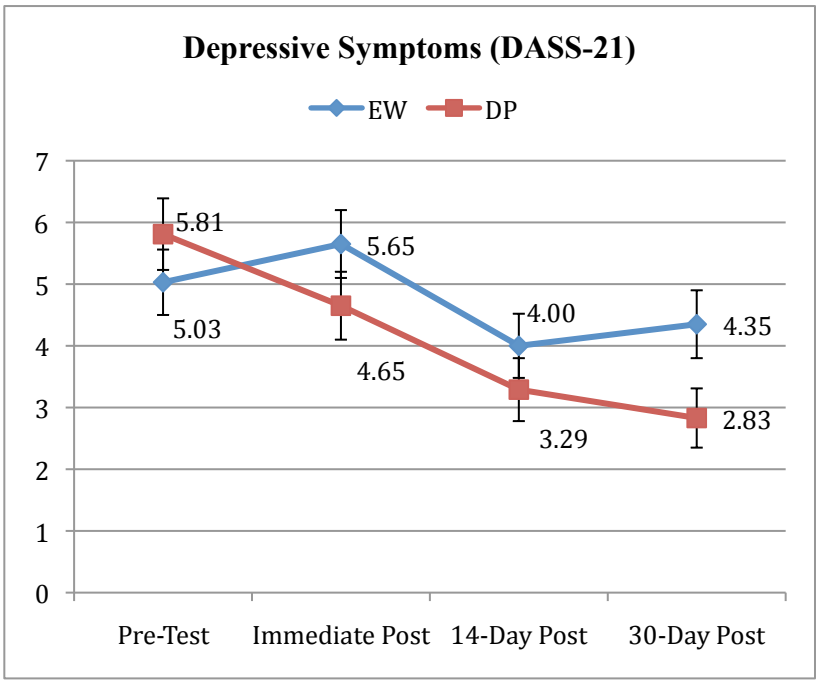


Table 13. *Estimated Depression Outcomes as a Function of Treatment Group in the Intent-to-treat Sample (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
Depressive Symptoms (DASS-21)	**Baseline (SE) 95% CI**	5.03 (0.53) 4.06 to 6.10	5.81 (0.58) 4.75 to 6.97	5.03 (0.53) 4.06 to 6.10	5.81 (0.58) 4.75 to 6.97	5.03 (0.53) 4.06 to 6.10	5.81 (0.58) 4.75 to 6.97
	Post (SE) 95% CI	5.65 (0.55) 4.62 to 6.76	4.65 (0.55) 3.65 to 5.75	4.00 (0.52) 3.05 to 5.06	3.29 (0.51) 2.37 to 4.32	4.35 (0.55) 3.36 to 5.46	2.83 (0.48) 1.95 to 3.81
Effect Size Within Tx Group	**(*d*)**	0.32	-0.55	-0.53	-1.21	-0.35	-1.47
	LMM	$B = 0.62$ $t_{116} = 1.04$, $P = .299$	$B = -1.17$ $t_{224} = -1.82$, $P = .070$	$B = -1.03$ $t_{119} = -1.75$, $P = .083$	$B = -2.53$ $t_{229} = -4.03$, $P < .001$	$B = -0.69$ $t_{119} = -1.14$, $P = .256$	$B = -3.00$ $t_{229} = -4.84$, $P < .001$
Effect Size Between Tx Groups	**(*d*)**	0.44		0.38		0.60	
	LMM	$t_{222} = 2.02$, $P = .045$		$t_{227} = 1.72$, $P = .086$		$t_{227} = 2.73$, $P = .007$	

Mean scores are adjusted by the covariates of pre-test SES, total PTSD symptoms, thought suppression, anxiety, rumination, acceptance, stress, physical symptoms, and duration of treatment.

Fixed effects. Significance test results for fixed effects are summarized in Table 14, and estimates of fixed effects are reported in Table 15. Even with allowing for random intercepts, the variables of rumination, stress, and alexithymia at pre-test showed significant effects on predicting depression scores, suggesting these variables may play a role in maintaining or decreasing depression symptoms. The finding that time interval was significant, and that the interaction of time and condition were significant, are easy to interpret. The result that condition alone was not a significant predictor of depression was misleading; given the above patterns of rise and fall, it is not surprising that the grand means (i.e., mean of all assessment intervals) were not found to be significantly different. Post-hoc analyses with Bonferroni corrections showed that reductions in symptoms between baseline and the immediate and 30-day posts were clearly much larger for the DP condition.

Table 14. *Significance of Model 2 Fixed Effects on Depression.*

Variable	*df*	*F*	*p*
Covariates			
Rumination	(1, 88.28)	16.22	< .001
Stress	(1, 86.77)	5.74	.019
Alexithymia	(1, 92.24)	3.85	.053
SES	(1, 90.06)	1.62	.207
Total PTSD Symptoms	(1, 88.32)	0.78	.381
Thought Suppression	(1, 87.10)	0.07	.799
Anxiety	(1, 88.85)	2.43	.123
Acceptance	(1, 91.66)	2.07	.154
Physical Symptoms	(1, 84.21)	1.48	.227
Treatment Duration	(1, 89.36)	0.51	.477
Assessment Intervals (Time)	(3, 226.13)	9.97	< .001
Condition	(1, 83.64)	1.58	.213
Time*Condition	(3, 225.68)	2.76	.043

Table 15. *Model 2 Fixed Effect Estimates for Depression.*

	Unstan-dardized Estimate (*b*)	SE	Lower 95% CI	Upper 95% CI	*df*	*t*	*p*
Intercept[a] (Baseline for DP Condition)	5.87	0.58	4.80	7.03	231.61	24.26	< .001
Covariates							
Mean SES	0.18	0.14	-1.16	1.66	90.06	1.27	.207
Total PTSD Sympt.	0.02	0.02	-1.09	1.21	88.32	0.88	.381
Thought Suppression	0.08	0.31	-1.55	1.92	87.10	0.26	.799
Anxiety	0.87	0.59	-1.28	3.37	88.85	1.56	.123
Stress	1.43	0.64	-0.86	4.09	86.77	2.40	.019
Acceptance	1.19	0.88	-1.46	4.37	91.66	1.44	.154
Physical Symptoms	-0.30	0.24	-1.78	1.37	84.21	-1.22	.227
Alexithymia	1.10	0.59	-1.08	3.63	92.24	1.96	.053
Rumination	1.70	0.45	-0.30	3.96	88.28	4.03	< .001
Treatment Duration	-0.02	0.02	-1.12	1.19	89.36	-0.71	.477
Assessment Interval[b]							
Immediate Post	-1.17	0.63	-3.17	1.27	224.00	-1.82	.070
14-Day Post	-2.53	0.58	-4.29	-0.32	228.77	-4.03	< .001
30-Day Post	-3.00	0.55	-4.66	-0.89	229.00	-4.84	< .001
EW Condition[a]	-0.78	0.78	-3.07	2.03	224.47	-1.00	.032
EW x Interval[c]							
EW Immed. Post[c]	1.99	1.08	-1.03	5.63	221.97	2.02	.045
EW 14-Day Post[c]	1.78	1.13	-1.29	5.52	226.36	1.72	.086
EW 30-Day Post[c]	2.95	1.21	-0.37	6.94	226.85	2.73	.007

[a]The intercept in the SPSS output represents the baseline score for the DP condition. To calculate the intercept for the EW condition, simply add the beta coefficient for the EW Condition (i.e.,

5.87 – 0.78 = 5.09). [b]These per-assessment coefficients can be added to the intercept to calculate values for the DP condition at each assessment interval. [c]These values represent the *difference* in EW effect sizes for that assessment interval as compared to the DP condition at the same interval.

In terms of effect size reported in confidence intervals, from pre-test to 30-day post per condition, these results suggest with 95% confidence that participants in the DP condition saw depression symptoms significantly reduce by as little as 0.89 to as much as 4.66 points ($b = 3.00$; $t(229.00) = 4.84$, $p < .001$). For the EW condition results show a significant difference of 2.95 fewer points of improvement, with 95% confidence that changes in depression symptoms showed between 6.94 fewer points of reduction to 0.37 more reduction than the DP condition.

Random effects. In addition to these fixed estimates, the random effects due to participant differences were significant (see Model 2 selection results above). The variance in the location of individual intercepts was $b = 0.81$ (SE = 0.21; 95% CI = 6.36 to 7.22; Wald Z = 3.95, $p < .001$). That beta equals the total variance around the intercept, so the square root (standard deviation, i.e., 0.90) delineates the 68% confidence interval, and the double of that (i.e., 1.80) offers a 95% confidence interval. This suggests that with a mean intercept of 5.87 at baseline, individual intercepts varied by +/- 1.80. In addition, throughout the other assessment periods, scores varied by $b = 1.78$ (SE = 0.18; 95% CI = 7.34 to 8.05; Wald Z = 10.47, $p < .001$). This variance translates to a 95% confidence interval of individual scores being +/- 2.67 points from the regression line.

Discussion of findings regarding depression. These findings suggest that the EW condition had only a marginal impact on depression while the DP condition achieved a larger and sustained reduction in depression. This difference also suggests that the mechanism by which each intervention achieved reductions in PTSD symptoms may have differed since

depression is often comorbid with PTSD. Or it may be that the DP condition simply had the added benefit of reducing depressive symptoms in addition to symptoms of PTSD.

Physical illness symptoms. This study hypothesized that the DP condition would be associated with greater decreases in physical symptoms than the EW condition. This hypothesis was not supported. As in the primary outcome analyses, mean-centered auxiliary variables and SES were entered as covariates to improve the MLE process. Using a fixed effects model yielded a CAIC of 1084.95 (Model 1). By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 959.99 ($\chi 2$ (1, N = 86) = 124.96, $p < .001$). The addition of a random effects per assessment interval did not improve the model (Model 3 CAIC = 966.71), although offered a significantly better fit than the only fixed effects model. Thus Model 2 effects are reported, which includes fixed and random effects.

A graphical depiction of symptom score changes are presented in Figure 6, with marginal means per interval per condition summarized in Table 16. (Mean scores are adjusted by the covariates of SES, total PTSD symptoms, thought suppression, anxiety, rumination, acceptance, stress, physical symptoms, and duration of treatment.) The largest difference was reported between pre-test and 14-day post, with a loss of some of that improvement by the 30-day mark. For both conditions, differences at each of the three post-tests were significantly lower than baseline, and levels of symptom reduction between conditions were not significantly different from each other.

Figure 6. *Estimated Trajectories of the Physical Symptom (PILL) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed)*

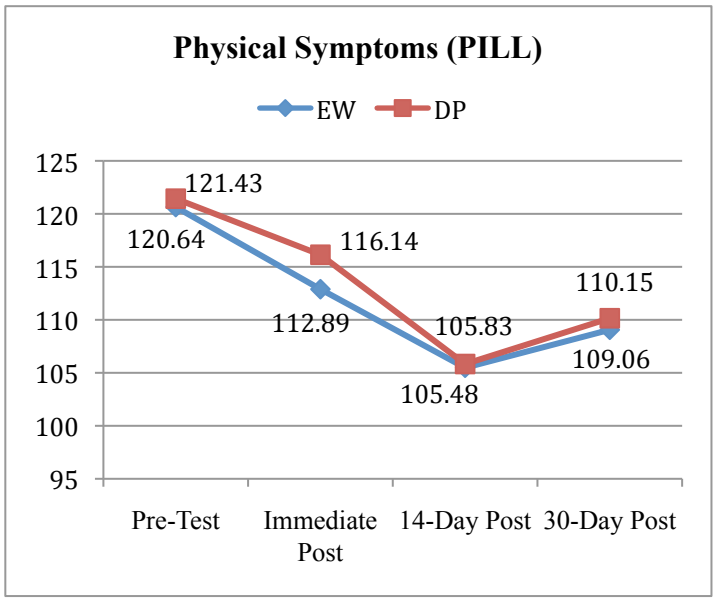


Table 16. *Estimated Physical Symptom (PILL) Outcomes as a Function of Treatment Group in the Intent-to-treat Sample (untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
Physical Symptoms (PILL)	**Baseline (SE) 95% CI**	120.64 (4.00) 112.89 to 128.62	121.43 (4.15) 113.43 to 129.69	120.64 (4.00) 112.89 to 128.62	121.43 (4.15) 113.43 to 129.69	120.64 (4.00) 112.89 to 128.62	121.43 (4.15) 113.43 to 129.69
	Post (SE) 95% CI	112.89 (3.87) 105.40 to 120.64	116.14 (4.15) 108.14 to 124.42	105.48 (3.94) 97.90 to 113.32	105.83 (4.11) 97.94 to 114.00	109.06 (4.02) 101.33 to 117.09	110.15 (4.19) 102.12 to 118.49
Effect Size Within Tx Group	**(*d*)**	-0.64	-0.53	-1.20	-1.53	-0.91	-1.12
	LMM	B = -7.72 t_{115} = -2.09, P = .038	B = -5.16 t_{106} = -1.68, P = .097	B = -15.22 t_{117} = -3.92, P < .001	B = -15.52 t_{107} = -4.91, P < .001	B = -11.77 t_{117} = -2.97, P = .004	B = -11.39 t_{107} = -3.58, P = .001
Effect Size Between Tx Groups	**(*d*)**	-0.11		0.02		-0.02	
	LMM	t_{221} = -0.52, P = .606		t_{224} = 0.08, P = .938		t_{224} = -0.07, P = .946	

Mean scores are adjusted by the covariates of SES, total PTSD symptoms, depression, anxiety, rumination, acceptance, stress, physical symptoms, and duration of treatment.

Significance results are summarized in Table 17, with coefficients provided in Table 18. Overall, both conditions showed statistically significant, comparable improvements (of approximately 15 points at 14-days and lessening to 11 points of reduction at 30-days). These results do not appear to offer much clinical significance. However, it may be worth noting that even after allowing for random effects, pre-test PTSD scores, depression, anxiety, and rumination were significant in predicting physical symptoms throughout and with rather large effect sizes.

Table 17. *Significance of fixed effects predicting physical symptoms (PILL).*

Variable	*df*	*F*	*p*
Covariates			
Total PTSD Symptoms	(1, 87.94)	5.30	.024
Depression	(1, 87.55)	9.53	.003
Anxiety	(1, 87.25)	11.61	.001
Rumination	(1, 87.22)	4.54	.036
Stress	(1, 87.52)	1.51	.223
Alexithymia	(1, 88.90)	0.02	.887
SES	(1, 89.51)	0.49	.487
Thought Suppression	(1, 87.81)	0.82	.369
Acceptance	(1, 90.54)	0.09	.765
Treatment Duration	(1, 87.10)	0.41	.526
Assessment Intervals (Time)	(3, 223.07)	13.82	< .001
Condition	(1, 85.69)	0.08	.784
Time*Condition	(3, 222.91)	0.13	.940

[a]The intercept in the SPSS output represents the baseline score for the DP condition. [b]These per-assessment coefficients can be added to the intercept to calculate values for the DP condition at each assessment interval. [c]These values represent the *difference* in EW effect sizes for that assessment interval as compared to the DP condition at the same interval.

Table 18. *Model 2 Fixed Effect Estimates for Physical Illness Symptoms (PILL).*

	Unstan-dardized Estimate (*b*)	SE	Lower	Upper	*df*	*t*	*p*
Intercept[a] (Baseline for DP Condition)	121.50	4.13	113.53	129.73	148.373	59.769	< .001
Covariates							
Mean SES	0.83	1.19	-9.44	11.55	89.50	0.70	.487
Total PTSD Sympt.	0.34	0.15	-7.92	8.88	87.94	2.30	.024
Thought Suppression	-2.31	2.56	-15.05	11.13	87.80	-0.91	.369
Depression	-13.63	4.33	-29.18	3.12	87.55	-3.09	.003
Anxiety	15.85	4.84	-1.69	34.58	87.25	3.41	.001
Stress	6.52	5.44	-11.78	26.23	87.52	1.23	.223
Acceptance	-2.01	6.78	-22.40	20.25	90.54	-0.30	.765
Alexithymia	-0.65	4.63	-17.23	17.14	88.90	-0.14	.887
Rumination	7.71	3.70	-7.47	23.83	87.22	2.13	.036
Treatment Duration	0.12	0.18	-8.21	8.73	87.10	0.64	.526
Assessment Interval							
Immediate Post	-5.29	3.55	-19.69	10.05	222.971	-1.48	.139
14-Day Post	-15.60	3.56	-29.64	-0.58	224.799	-4.27	< .001
30-Day Post	-11.28	3.63	-25.60	4.03	224.882	-3.06	.003
EW Condition[a]	-0.79	5.96	-19.69	19.72	144.177	-0.13	0.894
EW x Interval[c]							
EW Immed. Post[c]	-2.54	4.95	-19.55	15.77	221.494	-0.52	.606
EW 14-Day Post[c]	0.41	5.31	-17.36	19.57	223.863	0.08	.938
EW 30-Day Post[c]	-0.36	5.32	-18.11	18.80	223.55	-0.07	.946

In terms of effect size reported in confidence intervals, from pre-test to 30-day follow-up per condition, these results suggest with 95% confidence that participants in the DP condition saw physical symptoms increase by up to 4.21 points or decrease by as many as 27.81 points. For the EW condition results showed a non-significant mean difference of 0.34 more symptom reduction; the 95% confidence interval suggests changes in physical symptoms ranged from increasing by 17.01 points more than the DP condition to improving by 19.15 points more than the DP condition.

In addition to these fixed estimates, the random effects due to participant differences were significant (as suggested by the significantly better fit of Model 2). The variance in the location of individual intercepts was *b* = 11.4 (SE = 1.09; 95% CI = 119.42 to 123.72; Wald Z =

10.48, $p < .001$). That beta equals the total variance around the intercept, so the square root (standard deviation, i.e., 3.38) delineates the 68% confidence interval, and the double of that (i.e., 6.75) offers a 95% confidence interval around the intercept. In addition, throughout the other assessment periods, individuals' scores varied by $b = 18.24$ (SE = 3.44; 95% CI = 112.88 to 136.64; Wald Z = 5.54, $p < .001$). This variance translates to a 95% confidence interval of individual scores being +/- 8.54 units from the regression line.

Discussion of physical symptom findings. The significant mean reductions in physical symptoms suggest both conditions affected physical symptoms to a similar degree. However, despite statistical significance, the loss of only 10 points on a scale with values endorsed ranging from 54 to 241 does not suggest much clinically relevant improvement. However, time of year might have predicted worsening of symptoms. Nearly one third of the sample participated in late fall (October/November); physical symptoms could be expected to increase due to reductions in temperature. In addition, nearly two-thirds participated in early spring (March/April), a period with increases in airborne allergens. Nevertheless, more than 30 years of EW research provide evidence of improvements in physical health being associated with confronting and expressing traumatic memories and the results of this study are congruent.

Process variables and potential mediators. The present study measured several attitudes and behaviors theorized by PTSD researchers to exacerbate (e.g., thought suppression) or reduce (e.g., cognitive acceptance) PTSD symptoms. It also assessed two in-session processes: participant changes in levels of distress as often measured during exposure exercises (Barlow, 2008), and changes in use of positive and negative emotion words since researchers have found them to be associated with symptom change (Pennebaker, 1997). However, to build support for the theorized interactions between such proposed mediating variables and outcomes, several

criteria must be satisfactorily addressed. Statistical support may be helpful at a later point but that is beyond the scope of this study; the current analyses are focused on meeting theoretical criteria for drawing conclusions regarding potentially overlapping processes (e.g., mediation).

Among criteria for establishing a mediator of therapeutic change, researchers (see Kazdin, 2007) have theorized that several requirements must be met. One is the demonstration of strong associations between a proposed mechanism and therapeutic change, and between both and a particular intervention. By assessing changes in PTSD symptoms and several behaviors and attitudes, at various time points, within two treatment conditions, the present study was designed to demonstrate the hypothesized relationships if they were present.

A second criterion for demonstrating mediation is 'specificity', whereby the method of study isolates mediators such that other potential mechanisms can be ruled out (Kazdin, 2007). The use of two interventions, only one of which explicitly targeted several attitudes and behaviors, was designed to allow observations of common effects of both treatments as well as differences in relationships between changes in the proposed mediator variables and changes in PTSD symptoms.

A third criterion is replication across various conditions can build evidence of consistency (Kazdin, 2007). While the present study cannot offer replication of its own findings, some features of the study could provide evidence of consistency across differing contexts. Specifically, the sample was not limited to a single category of trauma such as sexual assault. By allowing for several types of trauma, some generalization is already present in the sample.

Next, direct manipulation of the proposed mediator, and demonstration of an impact on outcome, help build a causal argument (Kazdin, 2007). One intervention (DP) in the present study attempted direct manipulation of various proposed mediators by treatment components that

encouraged changes such as greater cognitive acceptance of the trauma. The DP condition also provided word lists to counter alexithymia, prompted identification and challenging of depressing cognitions, elicited specific sensory cues related to the trauma, and more. However, even if participants reported changes in levels of acceptance and alexithymia, that would not "prove" that the intervention itself was responsible, or that the components believed by the researchers to effect those changes were the effective ingredients. However, to build evidence of those conclusions the present study incorporated a comparison condition that did not explicitly target those changes.

Changes in mediators have also been theorized to need to occur prior to changes in outcomes; not establishing this precedence is considered a weakness of many studies (Kazdin, 2007). The present study assessed several potential mediators at four time-points over the space of more than 30 days, and additional mediators within each in-person intervention session. These temporally rooted assessments may help in building arguments for temporal precedence of changes involved in symptom reduction.

Lastly, mediators have been theorized to operate according to a dose-response relationship (Kazdin, 2007). The present study offered at least one method of examining varied dosages and outcomes that could increase the plausibility and coherence of the proposed mechanisms and relationships. Specifically, the tracking of SUDS in session allowed for the possibility of distinct patterns to emerge that may have differed in relation to levels of PTSD symptom change. In other words, it may be that particular patterns of SUDS result from greater engagement with traumatic memories while others could be indicative of avoidance, suppression, dissociation, or otherwise less engagement. Pattern differences by themselves would not be interpretable but in association with changes in other measures, and if congruent with predictions

supported by theory, they may provide additional evidence for a proposed mechanism of change. Changes in proposed mediators will first be examined by intervention condition.

Thought suppression/avoidance. The hypothesis that the DP condition would show greater reductions in thought suppression was supported. First, the best-fitting model had to be identified. As in the primary outcome analyses, auxiliary variables and SES were entered as covariates to improve the MLE process. Mean-centered pre-test total PTSD symptoms was entered in place of the thought avoidance variable, which now was entered as the outcome variable. Using a fixed effects model (Model 1) yielded a CAIC of 1005.696. By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 945.612 ($\chi^2(1, N = 86) = 60.084$, $p < .001$). The addition of a random effects per assessment interval (Model 3) did not improve the model (CAIC = 952.335, which is a worse fit than the previous). Changing the covariance structure to autoregressive (Model 4), which is the expected structure for repeated measures, was also a worse fit (CAIC = 954.899). Lastly, exploring an unstructured covariance structure (Model 5) also provided a worse fit (CAIC = 993.148). Thus Model 2 effects are reported, which includes fixed and random effects.

Figure 7 illustrates the Model 2 levels of thought suppression per condition per assessment interval. As can be seen, an interaction occurs between condition and assessment interval. Mean scores and comparative tests are reported in Table 19.

Figure 7. *Estimated Trajectories of the Thought Suppression (WBSI) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

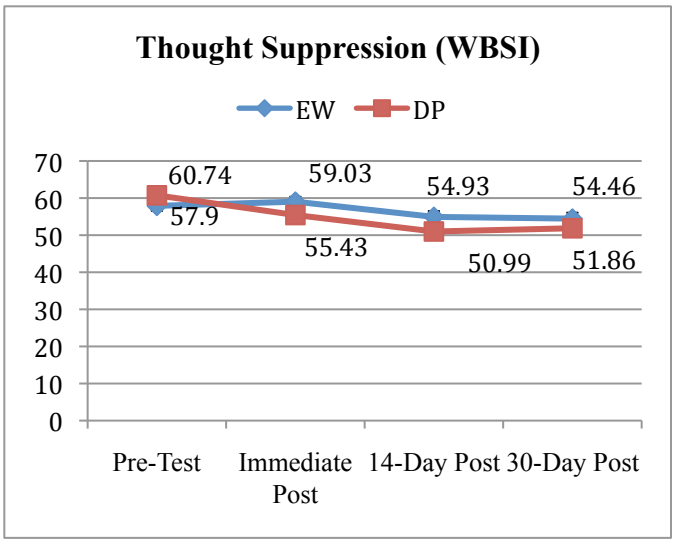


Table 19. *Marginal Mean WBSI (Thought Suppression) Scores Per Assessment Interval (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
Thought Suppress. (WBSI)	**Baseline (SE) 95% CI**	57.90 (1.35) 55.19 to 60.43	60.74 (1.28) 58.17 to 63.13	57.90 (1.35) 55.19 to 60.43	60.74 (1.28) 58.17 to 63.13	57.90 (1.35) 55.19 to 60.43	60.74 (1.28) 58.17 to 63.13
	Post (SE) 95% CI	59.03 (1.31) 56.39 to 61.47	55.43 (1.53) 52.36 to 58.30	54.93 (1.55) 51.83 to 57.83	50.99 (1.77) 47.44 to 54.31	54.46 (1.59) 51.27 to 57.43	51.86 (1.59) 48.38 to 55.12
Effect Size Within Tx Group	**(*d*)**	0.26	-1.13	-1.10	-1.88	-0.70	-1.74
	LMM	$B = 1.11$ $t_{116} = 0.84$ $P = .402$	$B = -5.12$ $t_{106} = -3.61$ $P < .001$	$B = -2.94$ $t_{119} = -2.00$ $P = .048$	$B = -9.43$ $t_{108} = -6.02$ $P < .001$	$B = -3.45$ $t_{119} = -2.28$ $P = .024$	$B = -8.66$ $T_{108} = -5.58$ $P < .001$
Effect Size Between Tx Groups	**(*d*)**	-0.71		-0.67		-0.54	
	LMM	$t_{223} = -3.26$, $P = .001$		$t_{227} = -3.08$, $P = .002$		$t_{226} = -2.49$, $P = .013$	

Mean scores are adjusted by the covariates of SES, total PTSD symptoms, anxiety, rumination, acceptance, depression, stress, physical symptoms, and duration of treatment.

Fixed effects. Significance results for fixed effects are summarized in Table 20, and estimates are provided in Table 21. Significant covariates in predicting thought suppression were pre-test PTSD symptoms and alexithymia, even after allowing for random participant factors (i.e., varied intercepts). In addition, time interval was significant, and the interaction of time and condition, but condition alone was not. Of course, significant differences in grand means are not surprising given the higher baseline of the DP condition.

However, the difference between a mean of 9-points reduction achieved and maintained by the DP condition, in contrast to the 3-point reduction by the EW condition was significant $t(226.45) = -2.49$, $p = .013$. With effect sizes understood in confidence intervals, results suggest with 95% confidence that participants in the DP condition saw thought suppression reduce by as few as 2.75 points or as many as 15.81 points ($b = 8.83$) at 30-day follow-up. For the EW condition, this mean effect was 5.34 points less, with 95% confidence that changes in thought suppression ranged from decreasing by 1.49 more than the DP condition to decreasing by 9.04 fewer points than the DP condition.

Table 20. *Significance of Fixed Effects Predicting Thought Suppression (WBSI).*

Variable	*df*	*F*	*p*
Covariates			
Total PTSD Symptoms	(1, 87.29)	9.81	.002
Alexithymia	(1, 90.91)	7.40	.008
SES	(1, 88.85)	.456	.501
Stress	(1, 85.72)	0.34	.562
Depression	(1, 85.75)	.052	.820
Anxiety	(1, 87.64)	0.02	.884
Acceptance	(1, 91.49)	0.88	.352
Physical Symptoms	(1, 83.67)	2.28	.135
Rumination	(1, 86.86)	0.56	.456
Treatment Duration	(1, 87.81)	1.40	.240
Assessment Intervals (Time)	(3, 225.76)	16.18	< .001
Condition	(1, 84.78)	1.05	.308
Time*Condition	(3, 225.51)	4.71	.003

Table 21. *Fixed Effect Estimates for Thought Suppression (WBSI) in Model 2.*

	Unstandardized Estimate (*b*)	SE	Lower	Upper	*df*	*t*	*p*
Intercept (Baseline for DP Condition)	60.93	1.27	63.28	58.37	225.92	28.154	< .001
Covariates							
Mean SES	-0.23	0.34	2.75	-3.53	88.85	0.68	.501
Total PTSD Sympt.	0.13	0.04	2.54	-2.51	87.29	-3.13	.002
Depression	-0.31	1.41	4.47	-5.98	85.75	0.23	.820
Anxiety	0.20	1.38	4.87	-5.36	87.64	-0.15	.884
Stress	0.84	1.45	5.57	-4.85	85.72	-0.58	562
Acceptance	-1.83	2.08	4.13	-9.09	91.49	0.94	.352
Physical Symptoms	0.93	0.61	4.28	-2.88	83.67	-1.51	.135
Alexithymia	3.21	1.14	7.18	-1.58	90.91	-2.72	.008
Rumination	0.75	1.01	4.78	-3.94	86.86	-0.75	.456
Treatment Duration	-0.06	0.05	2.39	-2.73	87.81	1.18	.240
Assessment Interval							
Immediate Post	-5.28	1.57	0.18	-11.59	225.13	3.69	< .001
14-Day Post	-9.70	1.81	-3.50	-16.80	228.14	6.13	< .001
30-Day Post	-8.83	1.78	-2.75	-15.81	228.20	5.64	< .001
EW Condition	-2.83	1.99	3.08	-9.91	186.94	1.52	.130
Condition*Interval							
EW Immediate Post	5.34	1.52	9.59	-0.11	223.13	-3.26	.001
EW 14-Day Post	5.32	1.60	9.69	-0.33	226.64	-3.08	.002
EW 30-Day Post	4.43	1.69	9.04	-1.49	226.45	-2.49	.013

In addition to these fixed estimates, the random effects due to participant differences were significant. The variance in the location of individual intercepts was $b = 4.77$ (SE = 1.05; 95% CI = 44.75 to 48.98; Wald Z = 4.79, $p < .001$). That figure equals the total variance around the intercept, so the square root (standard deviation, i.e., 2.18) delineates the 68% confidence interval, and the double of that (i.e., 4.36) offers a 95% confidence interval. This suggests that with a mean intercept of 60.92, individuals vary by +/- 4.36 of that. In addition, throughout the other assessments, scores vary with a total variance of $b = 5.87$ (SE = .59; 95% CI = 44.94 to 47.27; Wald Z = 10.51, $p < .001$). This variance converts to a 95% confidence interval of scores being +/- 4.85 units from the regression line.

Discussion of thought suppression. These findings support the hypothesis that DP would predict greater reductions in thought suppression. The patterns suggest two observations regarding processes involved. First, in the EW condition, participants reported an *increase* in thought avoidance at immediate post, which stands in contrast to the immediate decrease reported in the DP condition. Nevertheless, significant reductions under both conditions at 14- and 30-days post also suggest both conditions achieved one or more similar process outcomes, such as *habituation* to or *acceptance* of undesirable thoughts and memories. The significant reductions of thought suppression under both conditions may be associated with the significant reductions in severity of PTSD symptoms under both conditions; and the significant differences in levels of reduction of thought suppression may be related to significant differences between conditions in reduction of frequency of PTSD symptoms. While these parallel patterns of change in thought suppression and PTSD symptoms could be coincidental, the theory-congruent results suggest otherwise.

Cognitive acceptance. The hypothesis that the DP condition would show greater increases in cognitive acceptance of the trauma was supported, albeit not to an obviously clinically relevant degree. Results may also be somewhat muted due to baselines for each group that were above the mid-point on this 7-point scale, suggesting at least some acceptance at baseline. For statistical analyses, the best-fitting model had to first be identified. As in the primary outcome analyses, auxiliary variables and SES were entered as covariates to improve the MLE process. Mean-centered pre-test total PTSD symptoms was entered in place of the acceptance variable, which now was entered as the outcome variable. Using a fixed effects model (Model 1) yielded a CAIC of 388.50. By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 281.82 ($\chi^2(1, N = 86) = 106.68$, $p < .001$). The

addition of a random effects per assessment interval (Model 3) did not improve the model (CAIC = 288.54) although Model 3 fit significantly better than Model 1. Thus Model 2 effects are reported, which includes fixed and random effects. Figure 8 illustrates the Model 2 levels of acceptance per condition per assessment interval. As can be seen, the DP condition achieves an increase in acceptance whereas in the EW condition acceptance remains stable. Mean scores are reported in Table 22.

Figure 8. *Estimated Trajectories of the Cognitive Acceptance (CPOTS) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

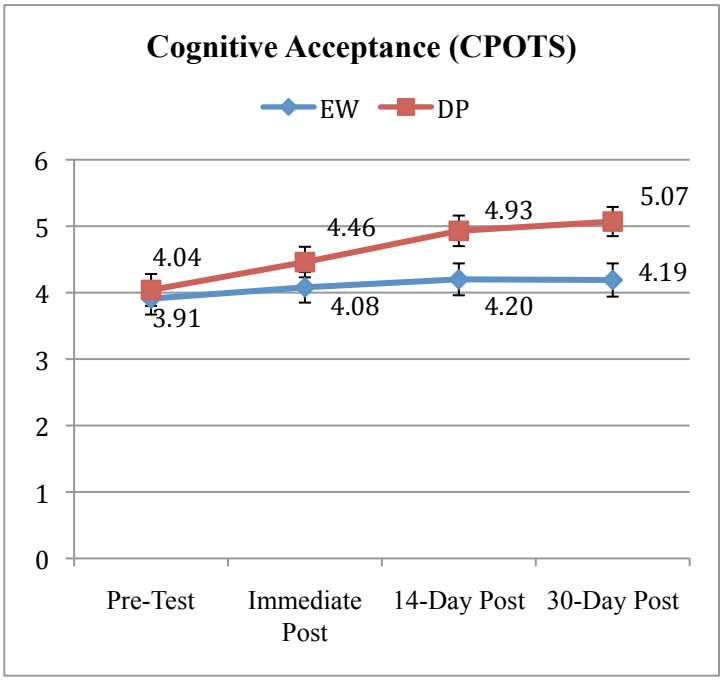


Table 22. *Marginal Mean Acceptance (CPOTS) Scores and Significant Differences Per Assessment Interval (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
PTSD Symptoms (MPSS-SR)	**Baseline (SE) 95% CI**	3.91 (0.24) 3.43 to 4.36	4.04 (0.24) 3.55 to 4.49	3.91 (0.24) 3.43 to 4.36	4.04 (0.24) 3.55 to 4.49	3.91 (0.24) 3.43 to 4.36	4.04 (0.24) 3.55 to 4.49
	Post (SE) 95% CI	4.08 (0.23) 3.62 to 4.53	4.46 (0.23) 3.99 to 4.90	4.20 (0.24) 3.72 to 4.66	4.93 (0.23) 4.48 to 5.36	4.19 (0.25) 3.71 to 4.65	5.07 (0.22) 4.63 to 5.48
Effect Size Within Tx Group	**(*d*)**	0.23	0.78	0.40	1.57	0.34	1.82
	LMM	$B = 0.17$ $t_{114} = 0.75$, $P = .455$	$B = 0.45$ $t_{104} = 2.49$, $P = .014$	$B = 0.33$ $t_{117} = 1.32$, $P < .190$	$B = 0.93$ $t_{105} = 5.04$, $P < .001$	$B = 0.28$ $t_{117} = 1.10$, $P = .273$	$B = 1.06$ $t_{105} = 5.83$, $P < .001$
Effect Size Between Tx Groups	**(*d*)**	-0.19		-0.46		-0.57	
	LMM	$t_{219} = -0.89$, $P = .374$		$t_{222} = -2.11$, $P = .036$		$t_{221} = -2.63$, $P = .009$	

Mean scores are adjusted by the covariates of SES, total PTSD symptoms, anxiety, thought suppression rumination, depression, stress, physical symptoms, and duration of treatment.

Fixed effects. Significance tests for fixed effects are summarized in Table 23, with estimates provided in Table 24. After allowing random effects for participants, no covariates were significant in predicting acceptance. However, assessment interval, and the interaction of that with condition were significant; condition also approached significance. For the DP condition, the mean difference from baseline to 30-day post was an increase in acceptance by 1.04 points (out of 7; 95% CI = 0.19 to 1.77). The effect for EW was a mean of 0.87 fewer points of increase than the DP condition (95% CI = 2.15 fewer points of increase to 0.26 more points of increase).

Table 23. *Significance of Fixed Effects Predicting Acceptance (CPOTS).*

Variable	*df*	*F*	*p*
Covariates			
SES	1, 87.03	0.04	.848
PTSD Symptoms	1, 85.63	0.86	.355
Thought Suppression	1, 84.87	0.97	.328
Depression	1, 83.27	1.95	.167
Stress	1, 84.23	0.04	.849
Rumination	1, 84.10	0.01	.980
Physical Symptoms	1, 81.70	0.77	.384
Anxiety	1, 84.34	0.18	.672
Alexithymia	1, 85.67	0.52	.475
Treatment Duration	1, 84.92	0.49	.487
Assessment Intervals (Time)	3, 220.64	8.37	.000
Condition	1, 82.84	3.64	.060
Time*Condition	3, 220.45	2.86	.038

Table 24. *Fixed Effect Estimates for Acceptance (CPOTS) In Model 2.*

	Unstandardized Estimate (*b*)	SE	95% CI Lower	95% CI Upper	*df*	*t*	*p*
Intercept (Baseline for DP Condition)	4.03	0.24	4.49	3.55	178.43	27.01	< .001
Covariates							
SES	0.01	0.07	0.59	-0.61	87.03	-0.19	.848
PTSD Symptoms	-0.01	0.01	0.46	-0.51	85.63	0.93	.355
Thought Suppression	-0.15	0.15	0.60	-0.97	84.87	0.98	.328
Depression	-0.39	0.29	0.61	-1.53	83.27	1.40	.167
Stress	0.06	0.31	1.05	-1.08	84.23	-0.19	.849
Rumination	0.01	0.21	0.84	-0.93	84.10	-0.03	.98
Physical Symptoms	-0.11	0.13	0.59	-0.89	81.70	0.88	.384
Anxiety	0.12	0.28	1.05	-0.95	84.34	-0.43	.672
Alexithymia	-0.19	0.27	0.76	-1.27	85.67	0.72	.475
Treatment Duration	-0.01	0.01	0.47	-0.51	84.92	0.70	.487
Assessment Interval							
Immediate Post	0.42	0.21	1.22	-0.47	220.56	-2.01	0.045
14-Day Post	0.90	0.20	1.65	0.04	222.61	-4.21	< .001
30-Day Post	1.04	0.20	1.77	0.19	222.53	-4.91	< .001
EW Condition	-0.12	0.35	0.96	-1.37	146.06	0.36	0.722
Condition*Interval							
EW Immediate Post	-0.27	0.31	0.75	-1.43	218.909	-0.89	0.374
EW 14-Day Post	-0.69	0.35	0.41	-1.95	221.493	-2.11	0.036
EW 30-Day Post	-0.87	0.36	0.26	-2.15	221.102	-2.63	0.009

In addition to these fixed estimates, the random effects due to participant differences were significant. The variance in the location of individual intercepts was b = -0.29 (SE = 0.06; 95% CI = 4.64 to 6.13; Wald Z = 5.34, p < .001). That figure equals the total variance around the intercept; the square root (standard deviation, i.e., 0.54) delineates the 68% confidence interval, and the double of that (i.e., 1.08) offers a 95% confidence interval. This suggests that around the intercept, individuals randomly varied by +/- 1.08 points. In addition, throughout the other assessments, scores varied with a total variance of b = -0.20 (SE = 0.02; 95% CI = 4.27 to 5.77; Wald Z = 10.42, p < .001). This variance converts to a 95% confidence interval of scores being +/- 0.89 units from the regression line.

Discussion of cognitive acceptance. The hypothesis that the DP condition would be associated with greater increases in cognitive acceptance of the trauma was supported; a significant increase compared to baseline was seen at *each* post-assessment, with continued growth even at 30-day follow-up. The EW condition did not show significant changes in acceptance at any interval. While this construct may appear to simply be the opposite of thought suppression, it may be offering something distinct. As with thought suppression, the parallel with significant differences between conditions on PTSD symptoms may be related with the increases in acceptance. And given the specificity of the relationship with only one treatment condition, this suggests the DP intervention succeeded (albeit minimally) in altering participants' acceptance of their trauma.

Rumination. The hypothesis that the DP condition would show greater reductions in rumination was supported. First, the best-fitting model had to be identified. As in the primary outcome analyses, auxiliary variables and SES were entered as covariates to improve the MLE process. Mean-centered baseline PTSD symptoms was entered in place of the rumination

variable, which now was entered as the outcome variable. Using a fixed effects model (Model 1) yielded a CAIC of 812.96. By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 745.18 ($\chi^2(1, N = 86) = 67.78$, $p < .001$). The addition of a random effects per assessment interval (Model 3) did not improve the model (CAIC = 751.90, which is a worse fit than Model 2). Thus Model 2 effects are reported, which includes fixed and random effects. Figure 9 illustrates the Model 2 levels of rumination per condition per assessment interval. As can be seen, an interaction occurs between condition and assessment interval. Mean scores are reported in Table 25.

Figure 9. *Estimated Trajectories of the Rumination (RRS) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

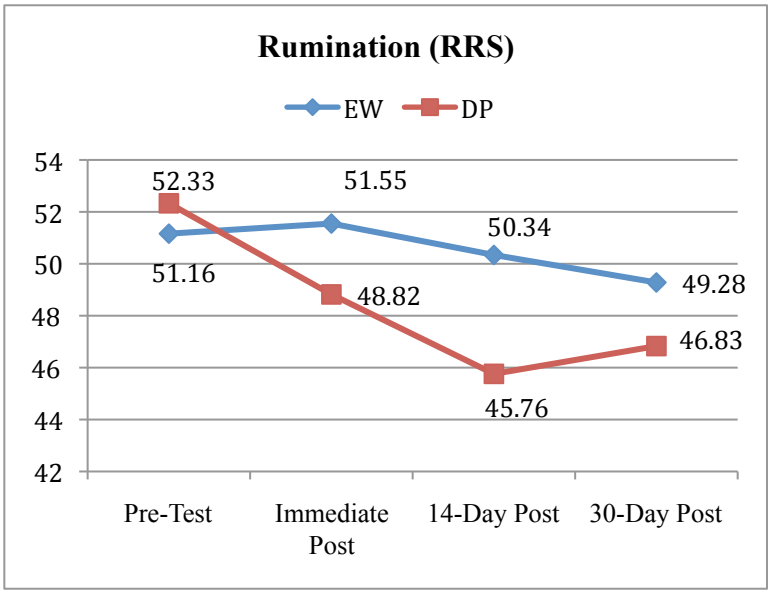


Table 25. *Marginal Mean RRS (Rumination) Scores Per Assessment Interval (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
Rumination (RRS)	**Baseline (SE) 95% CI**	51.16 (1.69) 47.90 to 54.53	52.33 (1.77) 48.94 to 55.85	51.16 (1.69) 47.90 to 54.53	52.33 (1.77) 48.94 to 55.85	51.16 (1.69) 47.90 to 54.53	52.33 (1.77) 48.94 to 55.85
	Post (SE) 95% CI	51.55 (1.70) 48.27 to 54.92	48.82 (1.77) 45.43 to 52.32	50.34 (1.79) 46.90 to 53.89	45.76 (1.78) 42.35 to 49.31	49.28 (1.79) 45.87 to 52.83	46.83 (1.82) 43.36 to 50.45
Effect Size Within Tx Group	**(*d*)**	0.08	-0.59	-0.17	-1.07	-0.36	-0.89
	LMM	$B = 0.39$ $t_{116} = 0.25$, $P = .805$	$B = -3.57$ $t_{104} = -1.90$ $P = .061$	$B = -0.95$ $t_{118} = -0.57$ $P = .573$	$B = -6.67$ $t_{105} = -3.43$ $P = .001$	$B = -2.00$ $t_{117} = -1.19$ $P = .238$	$B = -5.61$ $t_{105} = -2.84$ $P < .001$
Effect Size Between Tx Groups	**(*d*)**	0.34		0.50		0.31	
	LMM	$t_{220} = 1.63$, $P = .105$		$t_{223} = 2.30$, $P = .022$		$t_{223} = 1.43$, $P = .154$	

Mean scores are adjusted by the covariates of SES, total PTSD symptoms, anxiety, thought suppression, acceptance, depression, stress, physical symptoms, and duration of treatment.

Fixed effects. Significance tests for fixed effects are summarized in Table 26. Significant covariates in predicting rumination were pre-test total PTSD symptoms and depression, even after allowing for random participant factors (i.e., intercepts). In addition, assessment interval was significant, suggesting participants in both conditions improved, but the overall means by condition, and the interaction of time and condition, were not significant. In terms of effect size (Table 27), the DP condition showed a significant enduring reduction in rumination ($b = -5.51$; 95% CI = -1.52 to -12.07). The EW condition showed a smaller mean reduction by 3.82 points (95% CI = 13.07 less reduction to 4.75 more reduction) than the DP condition, but this difference was not significant. However, at 14-days, the EW condition showed a significantly smaller reduction in rumination by 6.14 points (95% CI ranging from 15.51 points of less reduction to 2.55 points of more reduction than the DP condition).

Table 26. *Significance of Fixed Effects Predicting Rumination (RRS).*

Variable	*df*	*F*	*p*
Covariates			
1. SES	1, 87.80	0.56	.456
2.Total PTSD Symptoms	1, 86.55	9.21	.003
3. Thought suppression	1, 86.06	1.36	.247
4. Depression	1, 84.98	10.03	.002
5. Stress	1, 85.68	0.03	.870
6. Acceptance	1, 89.76	0.05	.827
7. Physical Symptoms	1, 82.40	1.53	.219
8. Anxiety	1, 86.31	0.36	.552
9. Alexithymia	1, 88.14	0.75	.388
Treatment Duration	1, 86.96	0.19	.662
Assessment Intervals (Time)	3, 222.23	4.09	.007
Condition	1, 83.71	1.19	.278
Time x Condition	3, 222.03	1.93	.126

Table 27. *Fixed Effect Estimates for Rumination (RRS) In Model 2.*

	Unstandardized Estimate (*b*)	SE	Lower	Upper	*df*	*t*	p
Intercept (Baseline for DP Condition)	52.59	1.76	49.20	56.09	178.62	61.36	< .001
Covariates							
1. SES	-0.35	0.47	-4.63	4.10	87.80	-.075	.456
2.Total PTSD Symptoms	0.17	0.06	-3.33	3.80	86.55	3.04	.003
3. Thought suppression	-1.21	1.04	-6.52	4.39	86.06	-1.17	.247
4. Depression	5.87	1.92	-1.31	13.52	84.98	3.17	.002
5. Stress	-0.35	2.15	-7.75	7.60	85.68	-0.16	.87
6. Acceptance	0.60	2.76	-7.93	9.85	89.76	0.22	.827
7. Physical Symptoms	1.10	0.90	-4.03	6.49	82.40	1.24	.219
8. Anxiety	1.16	1.97	-5.96	8.77	86.31	0.60	.552
9. Alexithymia	-1.59	1.84	-8.38	5.66	88.14	-0.87	.388
Treatment Duration	-0.03	0.07	-3.56	3.62	86.96	-0.44	.662
Assessment Interval							
Immediate Post	-3.53	1.74	-10.03	3.42	221.75	-2.02	.045
14-Day Post	-6.59	1.77	-13.04	0.32	224.60	-3.64	< .001
30-Day Post	-5.51	1.81	-12.07	1.52	224.60	-3.00	.003
EW Condition	-1.18	2.51	-9.15	7.45	172.49	-0.47	.636
Condition*Interval							
EW Immediate Post	4.06	2.57	-4.20	12.96	219.75	1.63	.105
EW 14-Day Post	6.14	2.77	-2.55	15.51	223.45	2.30	.022
EW 30-Day Post	3.82	2.74	-4.75	13.07	222.83	1.43	.154

In addition to these fixed estimates, the random effects due to participant differences were significant as shown by the model selection analysis above. The variance in the location of individual intercepts was $b = 4.70$ (SE = 0.81; 95% CI = 49.67 to 52.92; Wald Z = 4.92, $p <$ .001). That figure equals the total variance around the intercept, so the square root (standard deviation, i.e., 2.17) delineates the 68% confidence interval, and the double of that (i.e., 4.34) offers a 95% confidence interval. In addition, throughout the other assessments, scores varied with a total variance of $b = 4.50$ (SE = .40; 95% CI = 50.45 to 52.04; Wald Z = 10.43, $p < .001$). This variance converts to a 95% confidence interval of scores being +/- 4.24 units from the regression line.

Discussion of rumination. These findings support the hypothesis that the DP condition would achieve greater reduction in rumination than the EW condition. In the EW condition, participants reported *higher* rumination at immediate post, followed by a reduction that never achieved a significant difference from baseline. In the DP condition, participants reported *immediate* decline in rumination (marginally significant), followed by significant decreases at 14-days, and largely maintained at 30 days. These results suggest that the DP condition was at least somewhat effective in its goal of manipulating this behavior. In addition, congruent with theory, these significantly different effects on rumination may have played a role in the significantly lower post-treatment PTSD and depressive symptom scores associated with the DP condition.

Alexithymia. The hypothesis that the DP condition would show greater reductions in alexithymia was modestly supported. First, the best-fitting model had to be identified. As in the primary outcome analyses, auxiliary variables and SES were entered as covariates to improve the MLE process. Mean-centered baseline total PTSD symptoms was entered in place of the

alexithymia variable, which now was entered as the outcome variable. Using a fixed effects model (Model 1) yielded a CAIC of 732.54. By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 586.56 (χ^2 (1, N = 86) = 145.98, p < .001). The addition of a random effects per assessment interval (Model 3) did not improve the model (CAIC = 593.28, which is a worse fit than Model 2). Thus Model 2 effects are reported, which includes fixed and random effects.

Figure 10 illustrates the Model 2 levels of alexithymia per condition per assessment interval, with mean scores reported in Table 28. As can be seen, while improvements were small overall, an interaction occurred between condition and assessment interval whereby participants in the EW condition lost the small initial gains in their ability to identify and describe emotions, while gains increased at each assessment interval for the DP condition.

Figure 10. *Estimated Trajectories of the Alexithymia (TAS-20) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed).*

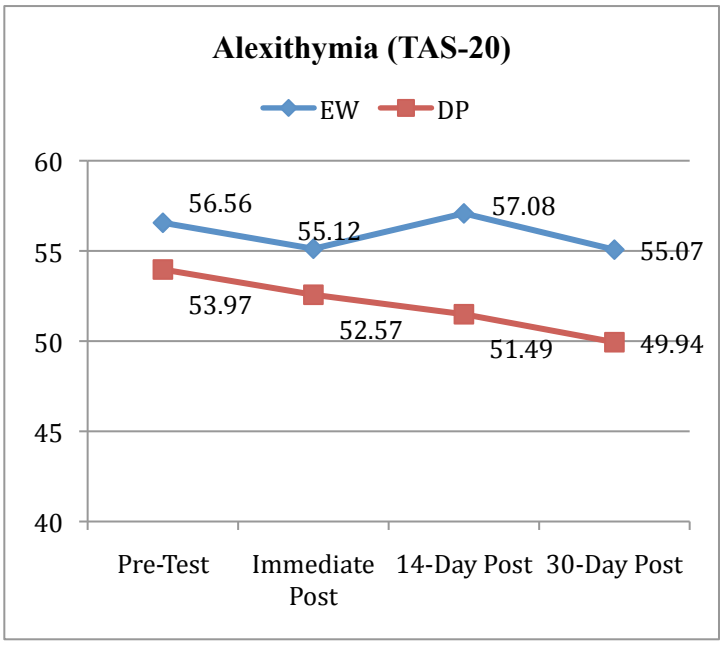


Table 28. *Marginal Mean TAS-20 (Alexithymia) Scores Per Assessment Interval (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
PTSD Symptoms (MPSS-SR)	**Baseline (SE) 95% CI**	56.56 (1.54) 53.57 to 59.64	53.97 (1.57) 50.94 to 57.08	56.56 (1.54) 53.57 to 59.64	53.97 (1.57) 50.94 to 57.08	56.56 (1.54) 53.57 to 59.64	53.97 (1.57) 50.94 to 57.08
	Post (SE) 95% CI	55.12 (1.52) 52.16 to 58.14	52.57 (1.58) 49.52 to 55.70	57.08 (1.61) 53.97 to 60.29	51.49 (1.61) 48.39 to 54.70	55.07 (1.60) 51.97 to 58.26	49.94 (1.58) 46.89 to 53.10
Effect Size Within Tx Group	**(*d*)**	-0.38	-0.33	0.13	-0.55	-0.36	-0.90
	LMM	B = -1.45 t_{116} = -1.25, P = .213	B = -1.38 t_{105} = -1.04, P = .302	B = 0.54 t_{117} = 0.43, P = .665	B = -2.44 t_{106} = -1.76, P = .081	B = -1.48 t_{118} = -1.18, P = .239	B = -3.95 t_{106} = -2.87, P = .005
Effect Size Between Tx Groups	**(*d*)**	-.01		0.36		0.31	
	LMM	t_{221} = -0.02, P = .988		t_{223} = 1.63, P = .104		t_{223} = 1.41, P = .159	

Mean scores are adjusted by the covariates of SES, total PTSD symptoms, anxiety, thought sfsdf suppression, acceptance, depression, stress, physical symptoms, and duration of treatment.

Fixed effects. Significance tests for fixed effects are summarized in Table 29. Only anxiety showed a significant effect (marginally) in predicting alexithymia, even after allowing for random participant factors (i.e., intercepts). In addition, assessment interval was significant, as was condition, but the interaction effect of time and condition was not significant.

Table 29. *Significance of Fixed Effects Predicting Alexithymia (TAS-20).*

Variable	*df*	*F*	*p*
Covariates			
1. SES	1, 87.54	0.37	.541
2.Total PTSD Symptoms	1, 86.13	0.01	.979
3. Thought suppression	1, 86.31	2.36	.128
4. Depression	1, 85.67	0.87	.355
5. Stress	1, 85.62	0.33	.568
6. Acceptance	1, 88.12	0.67	.417
7. Physical Symptoms	1, 83.64	0.17	.680
8. Anxiety	1, 85.32	3.58	.062
9. Rumination	1, 85.52	0.01	.981
Treatment Duration	1, 85.44	0.27	.606
Assessment Intervals (Time)	3, 222.24	3.06	.029
Condition	1, 85.11	4.11	.046
Time x Condition	3, 222.20	1.55	.202

Fixed effects. Estimates of fixed effects are summarized in Table 30. The reduction in symptoms from baseline to final post was only significant for the DP condition. In terms of effect size, in the combined model the DP condition showed a significant improvement of b = -4.02 (95% CI = -9.35 to 1.60) at 30-days follow-up. In contrast, although the EW condition showed initial decrease in alexithymia at immediate post, it then showed a rise at 14 days, and only a slight reduction at 30 days. EW reduction at 30 days was not significant and was 2.66 points less reduction than that of the DP condition (95% CI showed a range between 9.75 fewer points of reduction to 4.02 more points of reduction than the DP condition).

Table 30. *Fixed Effect Estimates for Alexithymia (TAS-20) in Model 2.*

	Unstandardized Estimate (*b*)	SE	95% CI Lower	95% CI Upper	*df*	*t*	*p*
Intercept (Baseline for DP Condition)	54.08	1.55	51.07	57.17	137.53	71.37	< .001
Covariates							
SES	0.28	0.46	-3.62	4.33	87.54	0.61	.541
Total PTSD Symptoms	0.00	0.06	-3.12	3.21	86.13	-0.03	.979
Thought suppression	-1.48	0.96	-6.27	3.54	86.31	-1.53	.128
Depression	1.74	1.90	-4.90	8.78	85.67	0.93	.355
Stress	-1.17	2.05	-8.00	6.12	85.62	-0.57	.568
Acceptance	2.14	2.68	-5.93	10.82	88.12	0.82	.417
Physical Symptoms	0.36	0.88	-4.34	5.27	83.64	0.41	.680
Anxiety	3.47	1.88	-3.18	10.52	85.32	1.89	.062
Rumination	0.03	1.41	-5.66	6.04	85.52	0.02	.981
Treatment Duration	0.04	0.07	-3.11	3.27	85.44	0.52	.606
Assessment Interval							
Imm. Post	-1.39	1.27	-6.74	4.24	222.36	-1.10	.273
14-Day Post	-2.47	1.32	-7.89	3.24	223.87	-1.87	.063
30-Day Post	-4.02	1.30	-9.35	1.60	223.92	-3.07	.002
EW Condition	2.60	2.29	-4.75	10.45	134.83	1.16	.247
Condition*Interval							
EW Immed. Post	-0.03	1.76	-6.33	6.66	221.01	-0.02	.988
EW 14-Day Post	3.05	1.91	-3.62	10.13	222.84	1.63	.104
EW 30-Day Post	2.66	1.92	-4.02	9.75	222.86	1.41	.159

In addition to these fixed estimates, the random effects due to participant differences were significant. The variance in the location of individual intercepts was $b = 1.21$ (SE = 0.23; 95% CI = 4.63 to 10.61; Wald Z = 5.67, $p < .001$). That figure equals the total variance around the intercept; the square root (standard deviation, i.e., 1.10) delineates the 68% confidence interval, and the double of that (i.e., 2.20) offers a 95% confidence interval. In addition, throughout the other assessments, scores varied with a total variance of $b = 0.58$ (SE = .06; 95% CI = 3.58 to 5.81; Wald Z = 10.48, $p < .001$). This variance converts to a 95% confidence interval of scores being +/- 1.52 units from the regression line.

Discussion of alexithymia. These findings were partially supportive of the hypothesis that the DP condition would show greater reduction in alexithymia. The continued improvement over time suggests the DP condition may have helped participants to identify and describe their emotions in ways formerly inaccessible to them, in a sustained manner. While the effect size may seem small, it may be worthwhile to consider that alexithymia is generally theorized about and assessed as a trait rather than as a skill deficit. For this reason the TAS-20 was not designed to monitor change over time. Perhaps a modified version or a new instrument could be designed to better help individuals identify limitations and changes regarding their facility for identifying and expressing emotions. Once again, the significant difference in reduction of alexithymia shown only by the DP condition may be related to the significantly lower final PTSD symptom scores demonstrated by the DP condition as compared to the EW condition.

Loneliness. Peer loneliness. The hypothesis that the DP condition would show significantly greater reduction in social loneliness than the EW condition was not supported. First, the best-fitting model had to be identified. As in the primary outcome analyses, the same mean-centered auxiliary variables as above and SES were entered as covariates to improve the

MLE process. Using a fixed effects model (Model 1) yielded a CAIC of 204.76. By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 87.04 ($\chi 2$ (1, N = 86) = 117.72, $p < .001$). The addition of a random effects per assessment interval (Model 3) did not improve the model (CAIC = 93.76, a worse fit than Model 2). Thus Model 2 effects are reported, which includes fixed and random effects.

A graphical depiction of social loneliness score changes is presented in Figure 11, with marginal means per interval per condition summarized in Table 31. (Mean scores are adjusted by the covariates of SES, total PTSD symptoms, thought suppression, depression, anxiety, stress, rumination, acceptance, physical symptoms, alexithymia, and duration of treatment.) It should be noted that on this 7-point scale, scores below a 4 are indicative of very little loneliness. The only significant difference was an *increase* in loneliness reported by the EW participants at 14-days post. This differed significantly from baseline as well as from the DP condition at 14 days which slowed a slight non-significant decrease in loneliness as compared to baseline.

Figure 11. *Estimated Trajectories of the Social Loneliness (SELSA-S) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed)*

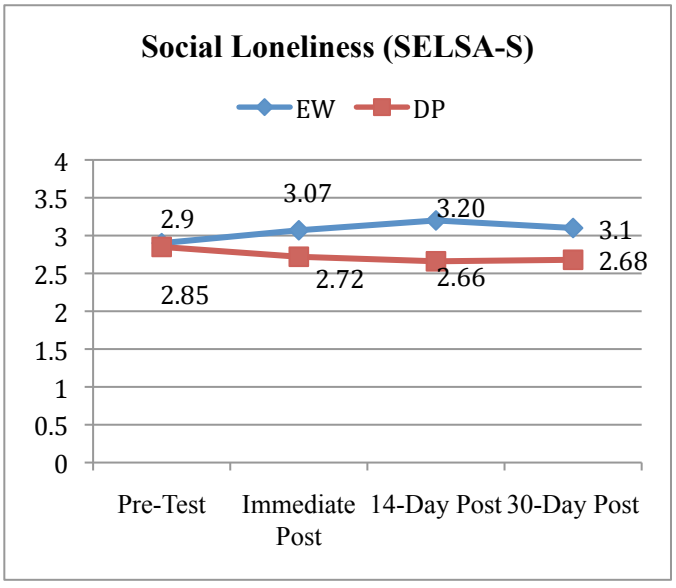


Table 31. *Marginal Mean Peer Loneliness (SELSA-S) Scores Per Assessment Interval (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
Peer/Social Loneliness (SELSA-S)	**Baseline (SE) 95% CI**	2.90 (0.17) 2.58 to 3.24	2.85 (0.17) 2.52 to 3.20	2.90 (0.17) 2.58 to 3.24	2.85 (0.17) 2.52 to 3.20	2.90 (0.17) 2.58 to 3.24	2.85 (0.17) 2.52 to 3.20
	Post (SE) 95% CI	3.07 (0.17) 2.74 to 3.41	2.73 (0.18) 2.40 to 3.08	3.20 (0.18) 2.85 to 3.57	2.66 (0.18) 2.32 to 3.02	3.10 (0.18) 2.75 to 3.46	2.69 (0.18) 2.34 to 3.05
Effect Size Within Tx Group	**(*d*)**	0.38	0.23	0.63	-0.34	0.41	-0.30
	LMM	B = 0.17 t_{114} = 1.24, P = .217	B = -0.12 t_{106} = -0.73, P = .465	B = 0.30 t_{115} = 2.05, P = .043	B = -0.18 t_{108} = -1.10, P = .275	B = 0.20 t_{115} = 1.35, P = .180	B = -0.16 t_{108} = -0.96, P = .341
Effect Size Between Tx Groups	**(*d*)**	0.30		0.48		0.35	
	LMM	t_{220} = 1.38, P = .169		t_{222} = 2.19, P = .030		t_{222} = 1.62, P = .108	

Fixed effects. Significance tests for fixed effects are reported in Table 32, with effect sizes and comparisons reported in Table 33. The covariates of depression, anxiety, and stress symptoms, as well as cognitive acceptance, were significant predictors of peer loneliness. In terms of omnibus *F* tests, there were no significant effects associated with assessment interval, treatment condition, or their interaction. Nevertheless, when groups were analyzed independently, the EW condition showed a significant temporary increase in loneliness that was no longer present at 30-days.

Table 32. *Significance of Fixed Effects Predicting Social Loneliness (SESLA-S).*

Variable	*df*	*F*	*p*
Covariates			
SES	1, 88.56	0.03	.868
Total PTSD Symptoms	1, 86.98	0.07	.795
Thought suppression	1, 86.54	2.34	.130
Depression	1, 85.64	11.09	.001
Anxiety	1, 86.59	8.50	.005
Stress	1, 86.29	10.49	.002
Acceptance	1, 89.69	4.89	.030
Physical Symptoms	1, 83.57	0.35	.557
Alexithymia	1, 88.01	0.62	.432
Rumination	1, 86.77	0.09	.767
Treatment Duration	1, 87.14	0.28	.596
Assessment Intervals (Time)	3, 221.35	0.07	.976
Condition	1, 84.78	2.39	.126
Time x Condition	3, 221.19	1.78	.152

Table 33. *Fixed Effect Estimates for Peer Loneliness (SELSA-S) in Model 2.*

	Unstandardized Estimate (*b*)	SE	95% CI Lower	95% CI Upper	*df*	*t*	*p*
Intercept (Baseline for DP Condition)	2.88	0.17	2.55	3.23	148.60	45.26	< .001
Covariates							
SES	-0.01	0.05	-0.43	0.44	88.56	-0.17	.868
Total PTSD Symptoms	0.00	0.01	-0.34	0.36	86.98	0.26	.795
Thought suppression	0.17	0.11	-0.38	0.75	86.54	1.53	.130
Depression	0.71	0.22	-0.07	1.55	85.64	3.33	.001
Anxiety	0.61	0.22	-0.15	1.44	86.59	2.92	.005
Stress	-0.69	0.21	-1.36	0.06	86.29	-3.24	.002
Acceptance	0.65	0.31	-0.27	1.67	89.69	2.21	.030
Physical Symptoms	-0.06	0.09	-0.56	0.48	83.57	-0.59	.557
Alexithymia	0.15	0.20	-0.55	0.92	88.01	0.79	.432
Rumination	-0.04	0.15	-0.66	0.62	86.77	-0.30	.767
Treatment Duration	0.00	0.01	-0.35	0.36	87.14	-0.53	.596
Assessment Interval							
Immediate Post	-0.12	0.15	-0.72	0.53	221.19	-0.81	.420
14-Day Post	-0.19	0.16	-0.80	0.47	223.28	-1.21	.229
30-Day Post	-0.17	0.16	-0.78	-1.88	223.31	-1.05	.297
EW Condition	0.05	0.25	-0.74	0.92	144.27	0.19	.847
Condition*Interval							
EW Immediate Post	0.29	0.22	-0.45	1.11	219.69	1.38	.169
EW 14-Day Post	0.50	0.24	-0.29	1.36	222.23	2.19	.030
EW 30-Day Post	0.37	0.24	-0.41	1.22	221.88	1.62	.108

Random effects. In addition to these fixed estimates, the random effects due to participant differences were significant. The variance in the location of individual intercepts was $b = 0.18$ (SE = 0.03; 95% CI = 0.13 to 0.26; Wald Z = 5.47, $p < .001$). That figure equals the total variance around the intercept; the square root (standard deviation, i.e., 0.42) delineates the 68% confidence interval, and the double of that (i.e., 0.84) offers a 95% confidence interval or

potential distance from the intercept based on individual differences. In addition, throughout the other assessments, scores varied with a total variance of $b = 0.12$ (SE = .01; 95% CI = 0.10 to 0.14; Wald Z = 10.44, $p < .001$). This variance converts to a 95% confidence interval of scores being +/- 0.69 units from the regression line.

Discussion of peer loneliness. Neither condition showed high peer loneliness at baseline or throughout, and neither succeeded in significantly decreasing scores from baseline. The EW condition showed a slight significant increase at 14 days but this was not maintained at 30 days. The DP condition showed a slight decrease in loneliness but this was not significant. To understand the increase in loneliness for the EW condition, it may have been influenced by difficulty talking to others about their traumatic experience. However, there may also have been a confound since participants were asked not to discuss the study with friends (i.e., potential participants) to preserve the study integrity. Given that the DP condition included a brief component promoting social interaction, this component may require further study and modification.

Family loneliness. The hypothesis that the DP condition would show greater reductions in social loneliness than the EW condition was not supported. First, the best-fitting model had to be identified. As in the primary outcome analyses, the same mean-centered auxiliary variables as above and SES were entered as covariates to improve the MLE process. Using a fixed effects model (Model 1) yielded a CAIC of 275.50. By allowing the intercept to vary (Model 2), this significantly improved the model to a CAIC of 146.10 ($\chi^2(1, N = 86) = 129.40$, $p < .001$). The addition of a random effects per assessment interval (Model 3) did not improve the model (CAIC = 152.82, which is a worse fit than Model 2). Thus Model 2 effects are reported, which includes fixed and random effects.

A graphical depiction of social loneliness score changes is presented in Figure 12, with marginal means per interval per condition summarized in Table 34. (Mean scores are adjusted by the covariates of SES, total PTSD symptoms, thought suppression, depression, anxiety, stress, rumination, acceptance, physical symptoms, alexithymia, and duration of treatment.) Baseline scores were very low and post-assessment scores did not vary much for either condition.

Figure 12. *Estimated Trajectories of the Family Loneliness (SELSA-S) Scores as a Function of Treatment Group in the Intent-to-Treat Sample (Untransformed)*

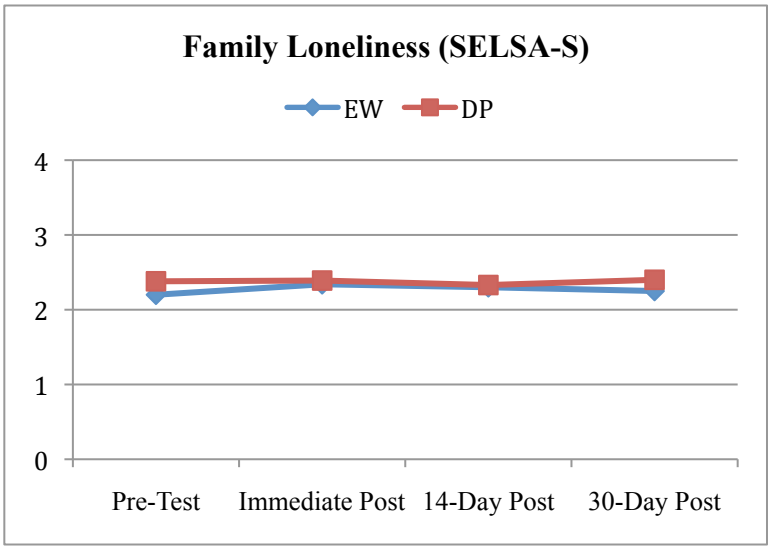


Table 34. *Marginal Mean Family Loneliness (SELSA-S) Scores Per Assessment Interval (Untransformed).*

		24-Hour Post		14-Day Post		30-Day Follow-Up	
		EW	DP	EW	DP	EW	DP
Peer/Social Loneliness (SELSA-S)	**Baseline (SE) 95% CI**	2.20 (0.17) 1.87 to 2.54	2.38 (0.18) 2.03 to 2.74	2.20 (0.17) 1.87 to 2.54	2.38 (0.18) 2.03 to 2.74	2.20 (0.17) 1.87 to 2.54	2.38 (0.18) 2.03 to 2.74
	Post (SE) 95% CI	2.34 (0.17) 2.00 to 2.69	2.39 (0.19) 2.04 to 2.77	2.30 (0.18) 1.95 to 2.66	2.33 (0.19) 1.97 to 2.72	2.25 (0.18) 1.91 to 2.62	2.40 (0.19) 2.03 to 2.79
Effect Size Within Tx Group	**(*d*)**	0.31	0.03	0.21	-0.08	0.11	0.05
	LMM	$B = 0.14$ $t_{116} = 1.02$, $P = .310$	$B = 0.02$ $t_{105} = 0.11$, $P = .911$	$B = 0.10$ $t_{118} = 0.70$, $P = .484$	$B = -0.04$ $t_{106} = -0.26$, $P = .795$	$B = 0.05$ $t_{117} = 0.37$, $P = .714$	$B = 0.03$ $t_{106} = 0.17$, $P = .865$
Effect Size Between Tx Groups	**(*d*)**	0.13		0.14		0.04	
	LMM	$t_{221} = 0.60$, $P = .547$		$t_{223} = 0.65$, $P = .172$		$t_{223} = 0.17$, $P = .864$	

Fixed effects. Significance tests for fixed effects are reported in Table 35, with estimates reported in Table 36. The covariates of depression, anxiety, and stress symptoms were significant predictors of family loneliness. There were no significant effects associated with assessment interval, treatment condition, or their interaction.

Table 35. *Significance of Fixed Effects Predicting Family Loneliness (SESLA-S).*

Variable	*df*	*F*	*p*
Covariates			
SES	1, 89.49	0.99	.323
Total PTSD Symptoms	1, 87.93	0.01	.980
Thought suppression	1, 87.51	0.15	.704
Depression	1, 86.65	5.63	.020
Anxiety	1, 87.54	5.17	.025
Stress	1, 87.28	5.77	.018
Acceptance	1, 90.56	1.50	.224
Physical Symptoms	1, 84.66	1.58	.212
Alexithymia	1, 88.90	0.60	.441
Rumination	1, 87.72	0.24	.629
Treatment Duration	1, 88.08	0.02	.901
Assessment Intervals (Time)	3, 222.14	0.18	.909
Condition	1, 85.83	0.22	.637
Time x Condition	3, 221.98	0.20	.897

Table 36. *Fixed Effect Estimates for Family Loneliness (SELSA-S) in Model 2.*

	Unstandardized Estimate (*b*)	SE	95% CI Lower	95% CI Upper	*df*	*t*	*p*
Intercept (Baseline for DP Condition)	2.40	0.18	2.06	2.77	146.15	37.93	< .001
Covariates							
SES	-0.05	0.05	-0.49	0.42	89.49	-0.99	.323
Total PTSD Symptoms	0.00	0.01	-0.36	0.38	87.93	0.03	.980
Thought suppression	0.04	0.12	-0.52	0.65	87.51	0.38	.704
Depression	0.53	0.23	-0.27	1.41	86.65	2.37	.020
Anxiety	0.50	0.23	-0.29	1.37	87.54	2.27	.025
Stress	-0.54	0.22	-1.24	0.26	87.28	-2.40	.018
Acceptance	0.37	0.32	-0.56	1.43	90.56	1.22	.224
Physical Symptoms	0.13	0.10	-0.41	0.71	84.66	1.26	.212
Alexithymia	0.16	0.21	-0.57	0.98	88.90	0.77	.441
Rumination	-0.08	0.16	-0.71	0.62	87.72	-0.49	.629
Treatment Duration	0.00	0.01	-0.36	0.38	88.08	-0.13	.901
Assessment Interval							
Immediate Post	0.01	0.16	-0.62	0.71	222.02	0.09	.931
14-Day Post	-0.05	0.16	-0.68	0.66	223.99	-0.28	.781
30-Day Post	0.02	0.17	-0.63	0.73	224.01	0.10	.923
EW Condition	-0.18	0.26	-0.97	0.71	142.06	-0.72	.474
Condition*Interval							
EW Immediate Post	0.13	0.22	-0.62	0.96	220.58	0.60	.547
EW 14-Day Post	0.15	0.24	-0.62	1.01	222.98	0.65	.519
EW 30-Day Post	0.04	0.23	-0.72	0.90	222.65	0.17	.864

Random effects. In addition to these fixed estimates, the random effects due to participant differences were significant. The variance in the location of individual intercepts was $b = 0.17$ (SE = 0.03; 95% CI = 0.12 to 0.24; Wald Z = 5.47, $p < .001$). That figure equals the total variance around the intercept; the square root (standard deviation, i.e., 0.35) delineates the 68% confidence interval, and the double of that (i.e., 0.70) offers a 95% confidence interval or potential distance from the intercept based on individual differences. In addition, throughout the

other assessments, scores varied with a total variance of $b = 0.11$ (SE = .01; 95% CI = 0.09 to 0.13; Wald Z = 10.44, $p < .001$). This variance converts to a 95% confidence interval of scores being +/- 0.66 units from the regression line.

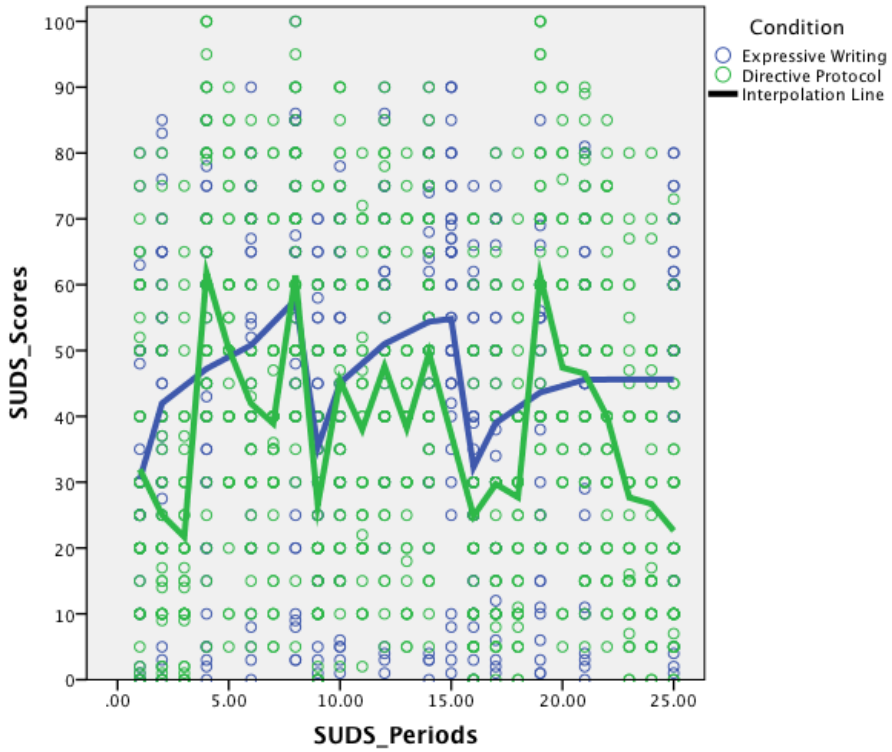
Discussion of family loneliness. The mean family loneliness scores at baseline were very low. Neither condition had much impact on reports of loneliness; thus, the hypothesis that the DP condition would show greater reductions was not supported. Given that social withdrawal and interpersonal difficulties are significant symptoms associated with trauma, the component of the DP that addresses relationships with family and friends requires testing with samples reporting higher baselines of social and family loneliness.

In-Session Differences

Two methods were implemented to assess processes that might differ between conditions and participants within the in-person session. These were subjective units of distress (SUDS), rated by participants at various points during the intervention, and changes in negativity and positivity from early in the intervention to later in the intervention.

Distress levels in session. During both interventions, participant SUDS were assessed numerous times. In the EW condition, ratings were requested five times per writing period, with the final ones per section assessing peak distress during that period. In the DP condition, SUDS were taken at the beginning and end of each section, with end SUDS assessing peak distress during that section. Figure 13 illustrates mean SUDS score trajectories per condition. For visual comparison the break periods were lined up between conditions (periods 9 and 16). These analyses were examined based on the treatment condition participants actually received, rather than as randomized (affecting one participant). They include the individual who only received half the DP intervention (total $N = 86$, 43 in each condition).

Figure 13. *Estimated Trajectories of the Observed SUDS Scores as a Function of Treatment Group.*



Note: Periods 9 and 16 mark the beginning of a new intervention period after a break. SUDS in the EW condition were taken approximately every 7 minutes, with final SUDS per section assessing the highest levels during that section. SUDS in the DP condition were taken at the beginning and end of each section, with the latter rating the peak level for that section.

Since the relationships between time and SUDS scores were not linear, linear statistical methods were not implemented. However, several observations can be made without statistical analyses. First, in both conditions participants arrived to the intervention with similar baseline arousal. A difference between conditions is then seen after 5-7 minutes of intervention whereby those in the DP condition reported a decrease in SUDS while those in the EW condition reported an increase. For the DP condition, this occurred at the close of Step 1, which provided psychoeducation and three demonstrations of autonomic responding to cognitions.

Next, leading up to the first break, the EW condition showed a continuous increase in arousal while the DP condition showed two peaks with some alleviation between them. Given the superior results for PTSD associated with the DP condition, particularly regarding frequency of symptoms, it may be that reaching peak distress levels twice in the first 20-30 minutes was beneficial.

Upon return from the first break, both conditions showed reductions in distress; the EW participants remained above their baseline while the DP participants dropped below their baseline score. During the second intervention period, both conditions showed increasing arousal until a peak just before the break. However, for the DP condition there were three incremental peaks with some relief between them.

After the second break, EW participants returned to baseline and DP participants returned to their previous sub-baseline score. During the third intervention period, the DP condition showed a rapid return to peak distress level, followed by gradual decline to a sub-baseline score. In contrast, the EW condition showed an increase in distress that was maintained through the end, with participants leaving the intervention more distressed than when they began the intervention, and than those completing the DP condition.

Despite the final level of distress in the EW condition, the declining peak arousals in the presence of presumably the same stimuli (i.e., trauma memories) suggest the EW participants experienced habituation. In addition, given the significant effect of the EW intervention on reducing PTSD symptoms, and the congruence of these results with similar findings by Sloan et al. (2005), these results support the present study hypothesis and previous theorization that EW achieves its beneficial results, at least in part, by exposure and habituation.

For the DP condition, evidence of habituation is less clear. The peak distress level in the third section was higher than those in the middle section. However, the decline in SUDS from period 20 to 21 (intervention Step 10), which occurred while participants were confronted with the exact same stimuli as during the very first peak (fourth SUDS rating, intervention Step 2), suggests habituation to those stimuli. At Steps 2 and 10, participants were asked to endorse emotions triggered by consideration of the trauma. Thus participants appear to have experienced habituation to negative emotion words, which in Step 2 were cues for high arousal. In addition to that indication of habituation, the subsequent declines may be indicative of a broader habituation to trauma memories or cues. In addition to examining SUDS trajectories themselves, they were also considered in reference to patterns of change in PTSD symptoms.

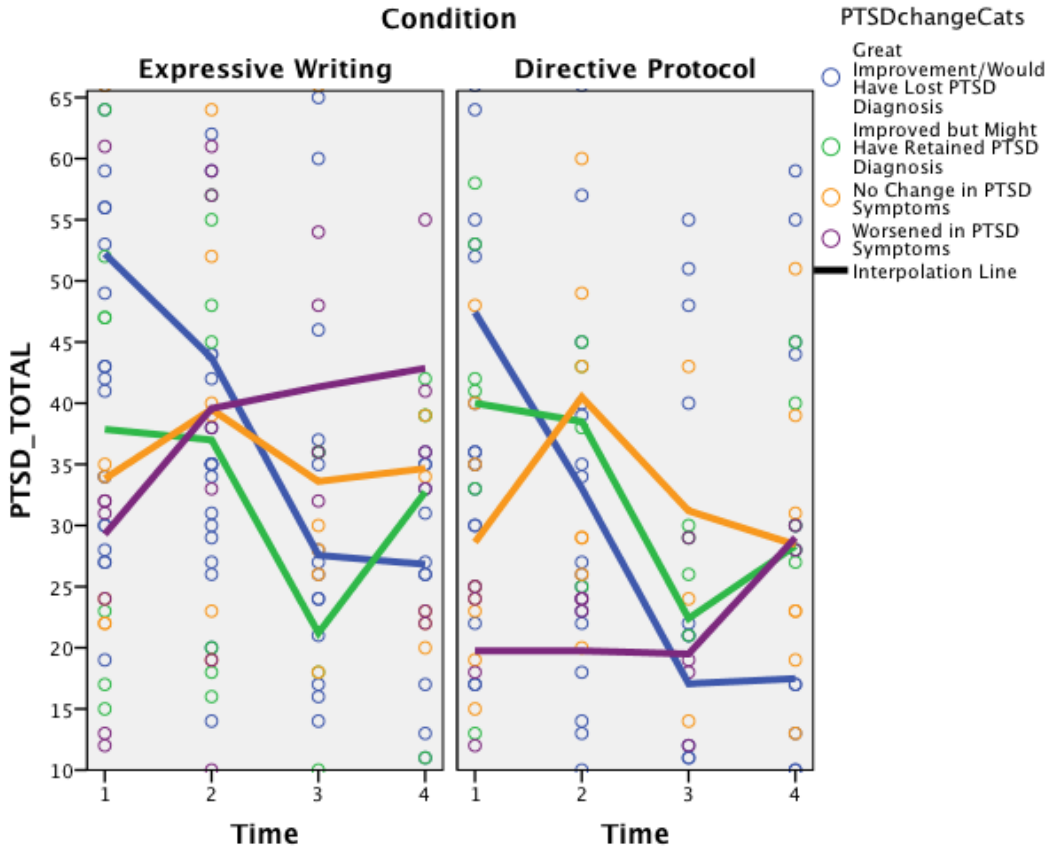
Comparisons of SUDS patterns based on changes in PTSD symptom changes. As discussed above, the MPSS-SR has been demonstrated to predict PTSD diagnoses with 93% accuracy using the cut-off score of 46 (Falsetti et al., 1993). In the present study, a cut-off score of 46 yielded the groups in Table 12 (above). Final classifications were based on participants' 30-day posts unless only the 14-day post or immediate post was completed. Chi-square analyses showed no significant differences between conditions at pre-test χ^2 (1, N = 86) = 0.45, p = .500 nor at final classification χ^2 (5, N = 84) = 2.70, p = .747.

To reduce the overlap between similar levels of change regardless of diagnosis, four groups were then identified based on logical symptom change intervals summarized in Table 37. A graphic of trajectories showing PTSD symptom levels per interval per treatment condition is provided in Figure 14.

Table 37. *Groups Based on PTSD Symptom Change Ranges*

Category	PTSD Symptom Change Range	EW	DP
Great Improvement/Would Have Lost PTSD Diagnosis	15 or more points of reduction in symptoms	23	23
Some Improvement but Might Have Retained PTSD Diagnosis	5-14.99 points of symptom reduction	7	6
No Change in PTSD Symptoms	Less than +/-5 points of change in symptoms.	6	8
Worsened PTSD Symptoms	5 or more points of increase in symptoms	7	4

Figure 14. *PTSD Symptom Trajectories Based on Grouping by Overall Outcome and Condition*



As can be seen, in both treatment conditions those who would go on to benefit the most (blue line) reported that improvements occurred at immediate-post and 14 days, with a

subsequent maintenance of those reductions. Those who showed moderate improvement (green) in both treatment conditions did not show much change at immediate post, reported a large reduction at 14 days, and then experienced a sizable loss in gains, particularly in the EW condition. This suggests that something occurred before the 30-day assessment to increase PTSD symptoms. Perhaps engaging in the assessment itself contributed to that outcome, which would be evidence of lack of habituation.

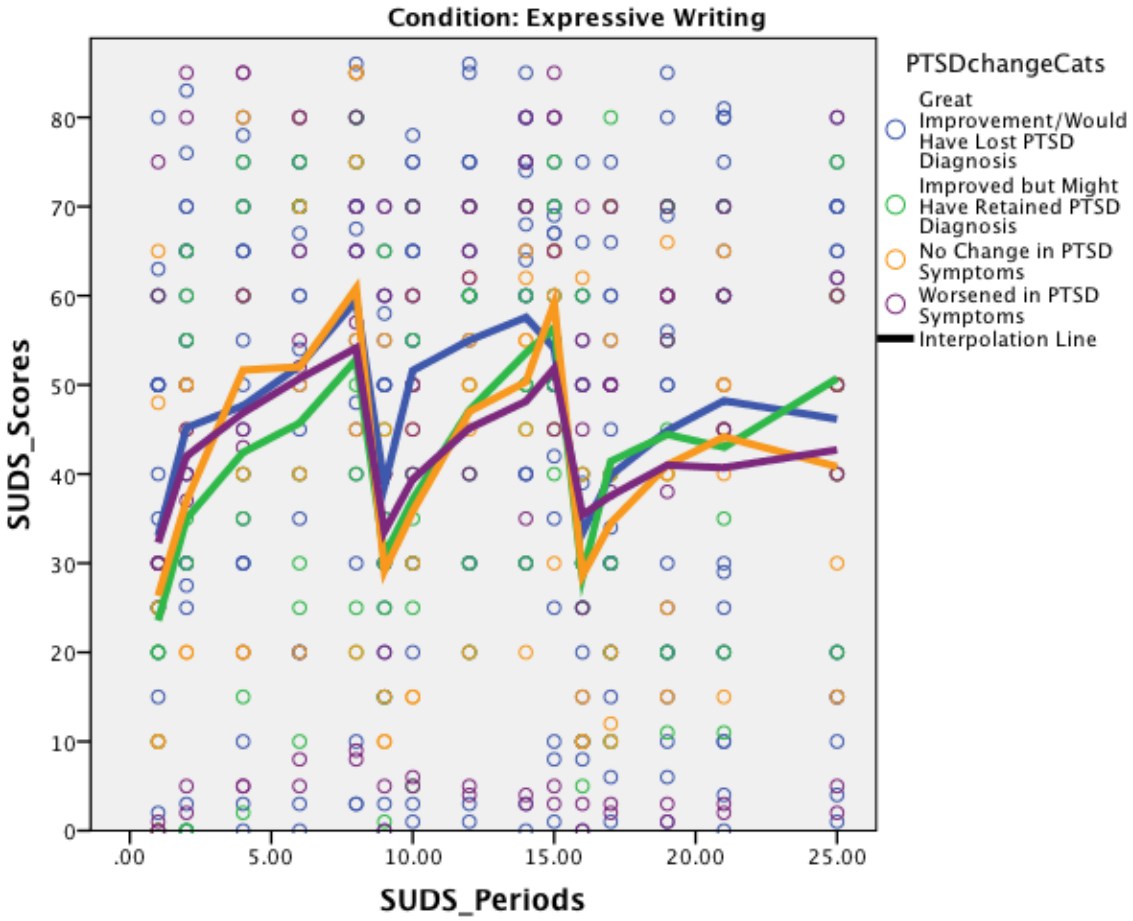
In both conditions, those who would show no overall change in PTSD symptoms (orange) showed patterns of immediate worsening of symptoms followed by return to baseline at 14 or 30 days. Since the immediate post assessed the two weeks prior to the in-person session, it may be that reactions such as anxiety regarding the upcoming intervention triggered an increase PTSD symptoms, which no longer occurred with simply filling out assessments, perhaps due to achieving some degree of resolution. Lastly, the group that would report worse symptoms at final post (purple) showed different patterns based on treatment condition. In the EW condition, similar to the no-change group these individuals reported worsening of symptoms at immediate post, but then continued worsening at 14 and 30 days. This may be indicative of fear of the intervention itself followed by on-going lack of resolution. In the DP condition, the worsened symptom group reported no changes at immediate post and even 14 days, followed by a late increase in symptoms at 30-day follow-up. The sudden increase may be unrelated to the intervention; alternatively it may reflect a phenomenon such as a behavioral change or the depletion of a resource that formerly suppressed these symptoms.

To examine for significant group differences at baseline, a 4 (PTSD symptom change categories) x 1 (baseline PTSD symptom scores) ANOVA was conducted within each condition. There were no significant differences at baseline in the EW condition. Results showed the

assumption of homogeneity of variances was violated (Levene Statistic (3, 37) = 5.03, p = .005) for the DP condition; thus, the Games-Howell correction was applied to post-hoc analyses. In the DP condition, the Great Improvement group significantly differed by a mean of 18.81 points (SE = 5.92; 95% CI = 2.43 to 35.18; *p* = .020) in baseline PTSD scores from the No Change group; and by 27.69 points (SE = 5.32; 95% CI = 12.67 to 42.70; *p* = .001) from the Worsened group. This suggests those in the DP condition whose scores later showed no change or worsened symptoms began the study with significantly fewer PTSD symptoms than those who benefitted from the intervention. One conclusion could be to avoid treating PTSD symptoms below a minimal threshold, but other evidence of interfering factors should be considered first. Next, these four patterns of symptom change were used to explore differences in SUDS trajectory patterns.

SUDS patterns in the EW condition. In the EW condition (Figure 15 below), those who benefitted most (blue) showed a pattern of three declining peaks over the course of the intervention, suggesting high engagement with their trauma followed by decreased sensitivity per subsequent writing period. The next most improved group (green) showed a higher peak during the second writing period and increasing arousal at the end of the last writing period, suggesting habituation did not occur. In addition, the lower valleys after breaks, and the initial low peak in the third period may be indicative of conscious or unconscious efforts to disengage (e.g., through thought suppression, dissociation, or other avoidance), which is congruent with theory regarding safety behaviors as obstacles to habituation. The final peak suggests they left the intervention without resolution, and this was paralleled in their PTSD symptoms when they lost some of their treatment gains after 14 days.

Figure 15. *Observed SUDS Levels in the EW Condition Based on Differences in PTSD Symptoms Between Pre-Test and Post.*

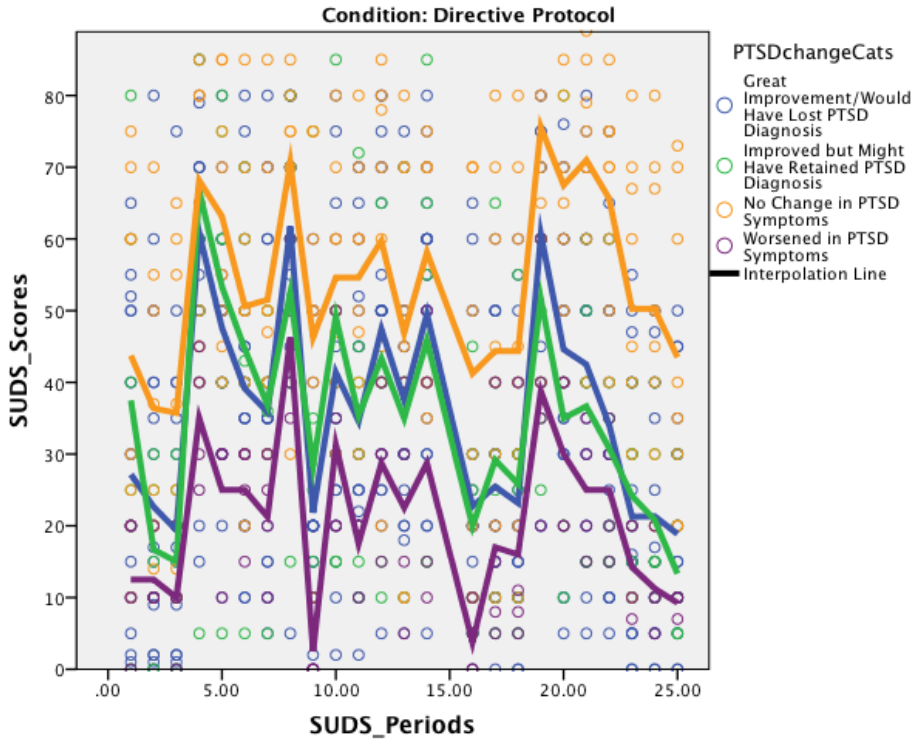


The SUDS pattern of the group that saw no reliable improvement (orange) showed earlier high arousal than two other groups, followed by a plateau from SUDS periods 4 to 6, deep valleys after breaks, delayed and jerky arousal in the middle writing period, and a lower peak than the Great Improvement group in the final writing period. This pattern may also be indicative of efforts to control or avoid arousal and a strong ability to disengage during breaks. The curve in the final section may only be mimicking habituation and simply show less engagement; the return to baseline PTSD symptoms at 14 and 30 days suggest that habituation was not achieved.

Finally, the EW group which reported Worse symptoms (purple) showed a pattern marked by the lowest peaks and an increasing peak at the end of the intervention. This pattern could be indicative of minimization of the trauma or lack of engagement, as well as difficulty avoiding or suppressing related thoughts at the end. Recall that this group reported worse PTSD symptoms at immediate post, 14-day post, and 30-day follow-up, suggesting that the exposure was insufficient to produce habituation.

SUDS and PTSD symptom change patterns in the DP condition. In the DP condition (Figure 16 below), those whose PTSD symptoms improved the most (blue) showed two high and fairly equal peaks during the first part of the intervention, three lower and increasing peaks in the middle period, and a high peak followed by graduated declines in the third period, ending at lower arousal than when they began. The high peak in part three suggests lack of habituation; however, the absence of a peak at SUDS period 21 (during intervention Step 12), which repeats the stimuli from the first peak (Step 2 of the intervention, SUDS period 4), suggests habituation to emotions cued by the trauma. The large and reliable decreases in PTSD symptoms after the intervention suggest that broader habituation occurred as well.

Figure 16. *Observed SUDS Levels in the DP Condition Based on Differences in PTSD Symptoms Between Pre-test and Post.*



Those who reported the next level of improvement (green) showed a similar pattern, differentiated by a higher first peak, an earlier highest peak in the middle section (when challenging maladaptive cognitions), and a lower peak in the final section (recalling the trauma). Unlike the three other groups, the high early peak in the middle section occurred during the cognitive challenging exercise, suggesting these individuals may have benefitted less due to maladaptive cognitions that were either more significant than in the other conditions or else not sufficiently addressed by the intervention. This theorized lack of cognitive resolution is congruent with the pattern of reduced PTSD symptoms at 14 days followed by significant loss of improvement at 30 days. Hence, the in-session SUDS suggest habituation but this was not reliably sustained.

The group that reported no reliable change (orange) showed a SUDS pattern characterized by very high arousal throughout, which increased in the third section, and with only minimal reductions during breaks. This pattern suggests they engaged with their trauma to a high degree, became emotionally dysregulated, and were unable to obtain relief even during breaks. This pattern suggests sensitization or increased responding to reminders of their trauma. Recall, however, that this group reported worse PTSD symptoms at immediate post, and a return to baseline at both subsequent assessments. This suggests that some time after the intervention they became habituated to reminders of the trauma, yet without experiencing resolution. Their sustained uncomfortable experience during the intervention may have reinforced the belief that avoidance of engagement is more effective than exposure. This raises questions about factors that can interfere with exposure leading to habituation.

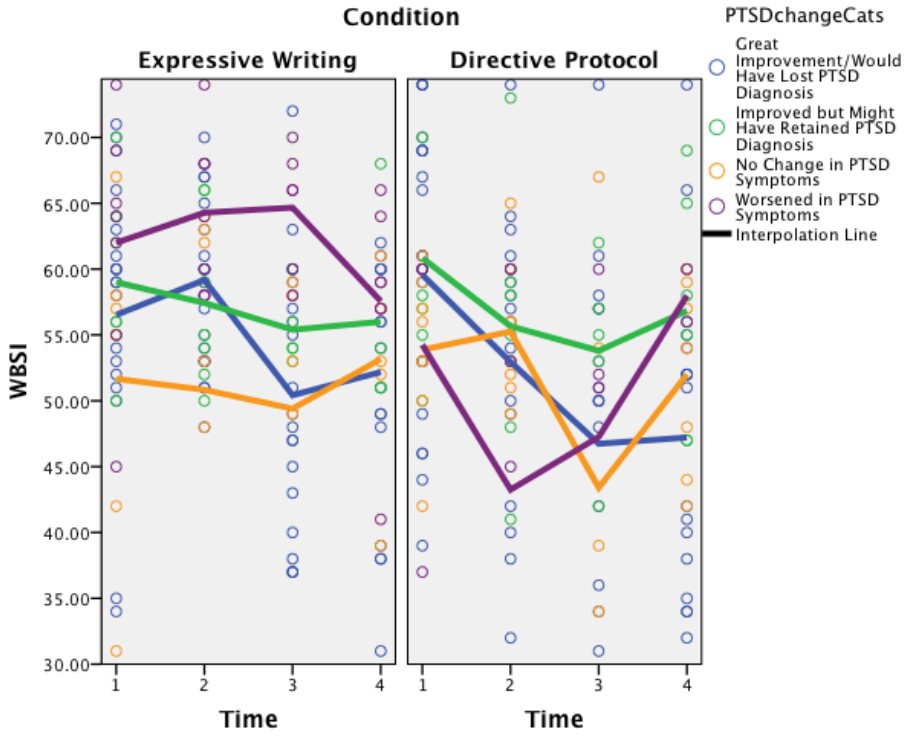
Lastly, the group that reported worse PTSD symptomatology at post (purple) showed the lowest peaks and valleys throughout the intervention and left the session with the same (lack of) distress as when they arrived. The first low peak (relative to others) may have been indicative of denial, minimization, or suppression of the effect of negative emotions associated with the trauma. Yet they did not deny negative emotions and endorsed as many as the other groups (that analysis is explored below). Since their PTSD symptoms later worsened, they either under-reported arousal, successfully suppressed it, or perhaps dissociated their affect from their cognitions. As with the No Change group, the next peak was higher suggesting increasing acknowledgement of distress in the presence of negative cognitions about the trauma. Addressing maladaptive cognitions immediately after the break also showed a peak (albeit muted compared to the three other groups). The even lower peaks at SUDS periods 12 and 14 may be indicative of minimization or denial of anger, blame, shame, and guilt, and of distressing sensory

cues associated with the trauma. The final peak (during the recall of the trauma) is the lowest of all three groups. Given the outcome of worsened PTSD symptoms, and the pattern of low arousal during engagement with the trauma, there appears to be a relationship. However, at immediate post and 14 days, PTSD symptom reports remained at baseline. This may be indicative of delayed affective engagement with the trauma that would finally begin to occur after two weeks. Again, given the cognitive endorsement of many negative emotions related to the trauma, these individuals may not have intentionally blocked affective engagement. Other variables below may assist in determining attitudes toward such engagement.

Discussion of SUDS patterns. These findings suggest that both conditions successfully triggered at least some emotional arousal, and participants who benefitted from the interventions most showed signs of habituation (i.e., less distress in the context of remembering their trauma) during the in-person session as well as afterwards. Those who improved to a moderate degree showed in-session habituation but an interruption or loss of habituation after 14 days, perhaps due to unresolved cognitive factors. Obstacles to in-session habituation were evident in those who saw no symptoms change or worsening of symptoms. These included affective under-engagement as well as over-engagement. Deliberate and unintended factors could be involved, such as thought avoidance/suppression, rumination, dissociation, alexithymia, and efforts at acceptance that might be too 'forced' rather than 'genuine'. To examine potentially conscious factors, trajectories of changes in thought suppression, acceptance, alexithymia, and rumination were next graphed according to the PTSD symptom change pattern groups.

Combinations of processes. In-Session SUDS, PTSD symptom change, and thought suppression. Figure 17 illustrates the changes in thought suppression scores based on the groups of PTSD symptom change.

Figure 17. *Changes in Thought Suppression (WBSI) Scores Based on PTSD Symptom Change by Condition*



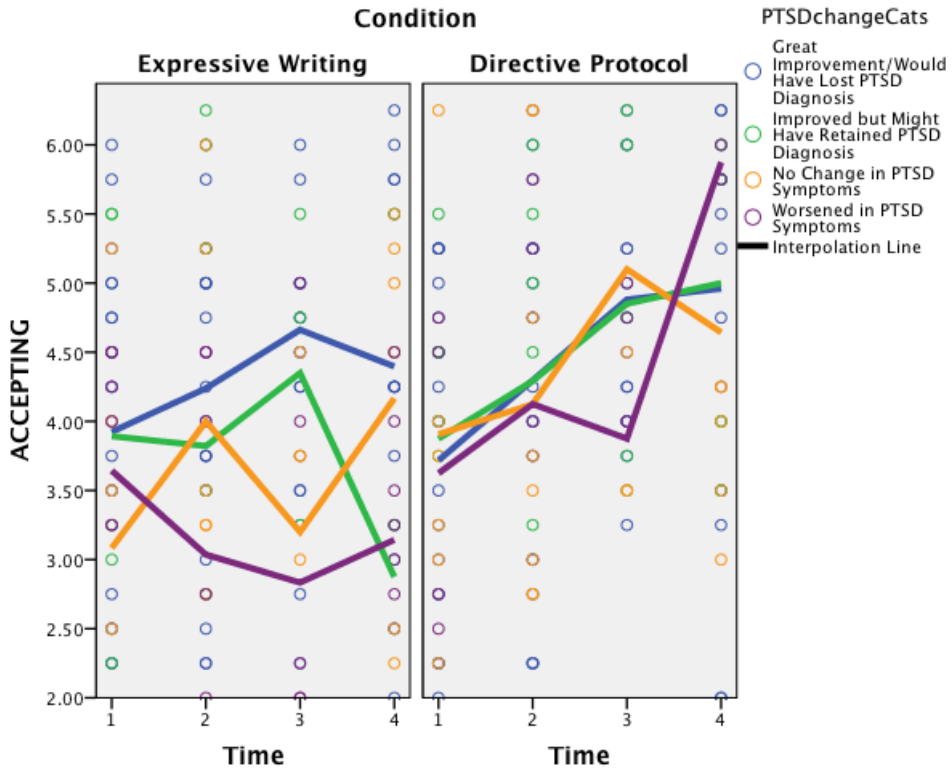
As can be seen, in the EW condition the PTSD symptom increase group (purple), which also showed subdued SUDS during the intervention, was associated with the highest levels of thought suppression. This suggests there was intentional avoidance of engagement. In the DP condition, the group with worse symptomatology at 30 days endorsed low thought suppression immediately after the intervention, suggesting their subdued SUDS may have been due to a less deliberate behavior; perhaps dissociation or due to alexithymia. Nevertheless, there is an obvious relationship between their increasing thought suppression scores at 14- and 30-days and PTSD symptom scores at final post. Perhaps their ability to not engage was exhausted by that time and this led to thoughts becoming intrusive and conscious efforts to suppress them.

In both treatment conditions, both groups that benefitted (blue, green) showed reductions in thought suppression, suggesting these reductions may have played a role in sustained lower

PSTD symptoms. In terms of dose-effect relationships, the unequal levels of reduction in thought suppression paralleled the unequal levels of reduction in PTSD symptoms between these groups. Lastly, the group that reported no overall change in PTSD symptoms also showed very little sustained change in thought suppression, and intermediate changes in both were parallel, suggesting a strong relationship between PTSD symptoms and active thought suppression. In the DP condition, this was the group that became very highly aroused for the duration of the intervention suggesting that, despite successful exposure, a desire to suppress the experience may have interfered with the ability to achieve habituation. This may be indicative of lacking acceptance not only of the trauma but perhaps of something like the intervention itself, or of the arousal triggered by it; something kept these emotions from dissipating below a fairly high baseline.

In-Session SUDS, PTSD symptom change, and cognitive acceptance. Figure 18 illustrates the changes in cognitive acceptance scores based on the groups of PTSD symptom change.

Figure 18. *Changes in Acceptance (CPOTS) Scores Based on PTSD Symptom Change by Condition*



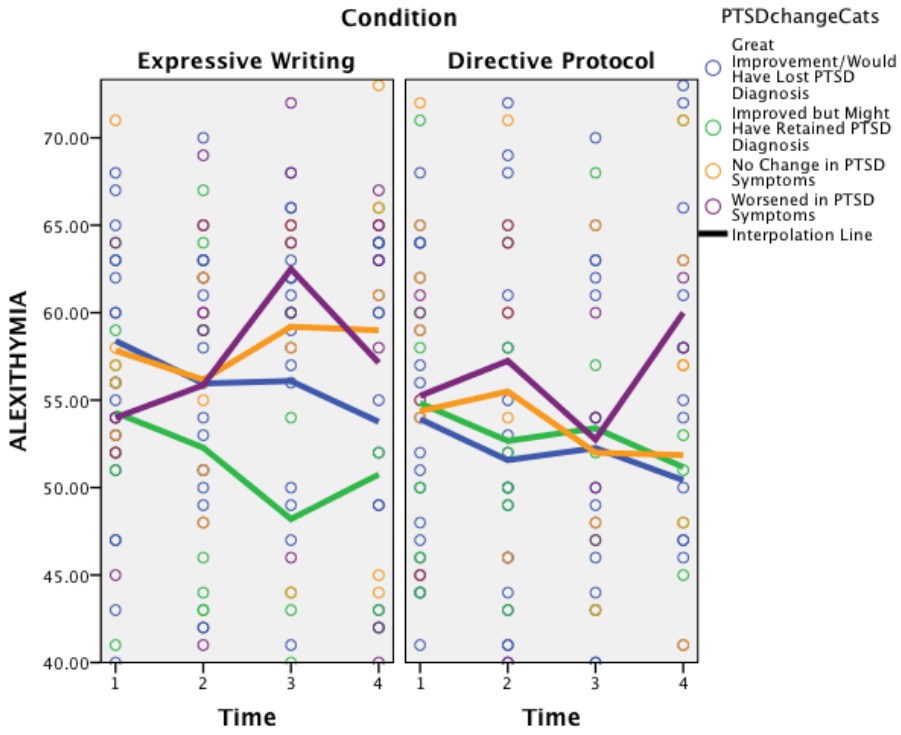
In the EW condition, those whose PTSD symptoms grew worse (purple), and whose SUDS appeared somewhat subdued, also reported low levels of acceptance before and after the intervention, which is congruent with theory regarding prolongation of PTSD symptoms. The EW group which reported no changes (oranges) in PTSD symptoms showed a pattern of increase and decrease in acceptance, as if trying to accept but without stable resolution. Lastly, the two groups who reported improvements in PTSD symptoms reported increases at 14 days but then were very divergent at 30 days; this may account for their difference in final PTSD symptoms. During the intervention their SUDS patterns were very similar, suggesting something more than exposure and arousal are necessary for greater symptom recovery, such as achieving cognitive acceptance.

In the DP condition, those whose PTSD symptoms worsened (and whose SUDS ratings were subdued relative to others) reported the greatest increases and highest final outcome score in acceptance. This supports the "sugarcoating" or trauma minimization theory of Honos-Webb et al. (2002), whereby cognitively endorsing 'acceptance' or 'resolution' of the trauma differs from actual achievement of those states. The two most improved groups also reported increases in acceptance, which is congruent with their SUDS patterns of arousal and habituation; however, exaggerated acceptance may also have been present in the less improved group. Lastly, the No Change group, whose SUDS ratings suggested high dysregulation during the intervention, reported unstable increases in acceptance, also possibly indicating a desire for acceptance which had not yet been achieved.

Overall, it may be that efforts to prematurely endorse acceptance interfered with the habituation process, or that obstacles to 'genuine' acceptance overlapped with obstacles to habituation for those participants. It is noteworthy that the EW condition did not explicitly promote acceptance and changes on that indicator were quite varied. In contrast, the DP condition explicitly promoted acceptance throughout the intervention and all four groups reported increases. These reported increases may indicate a problem of demand characteristics whereby DP participants felt compelled to endorse greater acceptance than they had actually attained. The discrepancy between the conscious effort to achieve acceptance and genuinely experiencing it may also be illustrative of a finding by Wisco, Sloan, and Marx (2013); they reported that 'positive reappraisal' may have interfered with exposure and habituation. By saying a situation was "not as bad as it could have been", victims may be avoiding acknowledgement of a loss and engaging in a 'safety behavior' that interferes with habituation.

In-Session SUDS, PTSD symptom change, alexithymia. Figure 19 illustrates the changes in alexithymia scores based on the groups of PTSD symptom change.

Figure 19. *Changes in Alexithymia (TAS-20) Scores Based on PTSD Symptom Change by Treatment Condition*

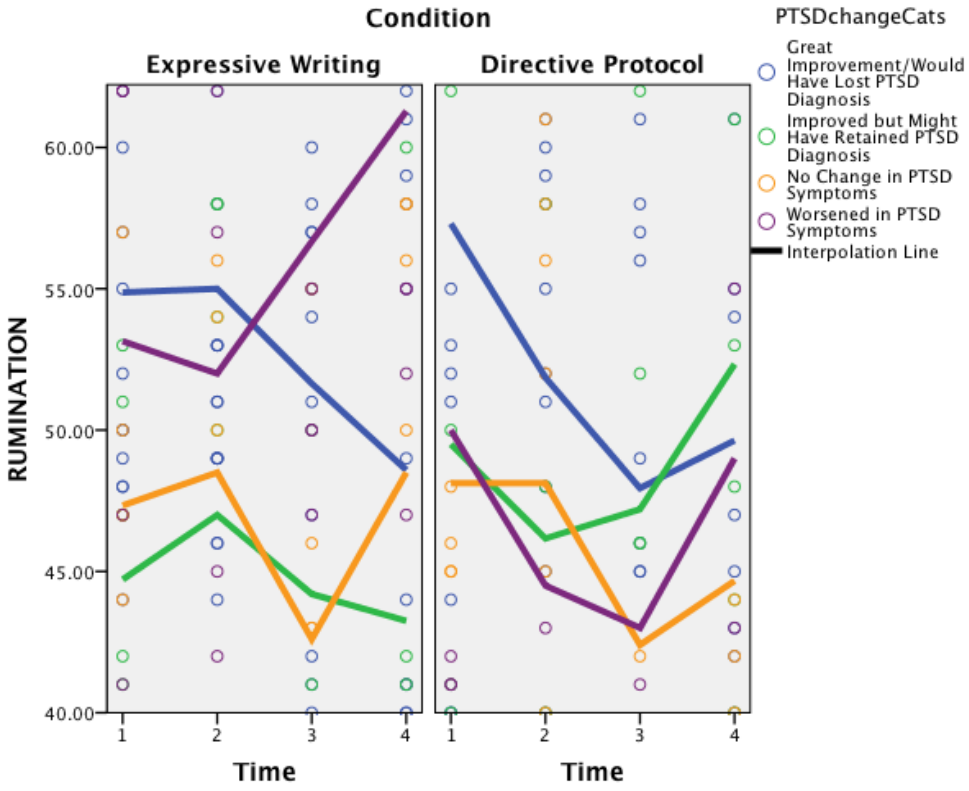


Under both treatment conditions, the group that saw an increase in PTSD symptoms (purple) reported the highest levels of alexithymia, which is congruent with the observation that these individuals reported the lowest SUDS during the interventions. In the DP condition, while these individuals could endorse numerous negative emotions cognitively, they did not endorse very much actual arousal during the intervention. Thus, this scale (TAS-20) which assessed difficulty identifying and describing one's feelings appears to have been accurately rated by this group.

In the EW condition, those who showed no changes in PTSD symptoms (orange) reported the next highest alexithymia. In the DP condition, the non-improved group differed from that of the EW condition and other groups by their very high SUDS ratings; these individuals reported high arousal throughout, which is consistent with their lower alexithymia scores. Under both treatment conditions, the two groups that improved in PTSD symptoms (blue, green) showed at least marginal reductions in alexithymia, which were sustained. This suggests both interventions may have helped participants who benefitted to identify and describe their emotions. Yet the immediate increase in alexithymia reported by the two other groups, and the subsequent volatility in their scores, is difficult to interpret conclusively.

In-Session SUDS, PTSD symptom change, and rumination. Figure 20 illustrates the changes in rumination scores based on the groups of PTSD symptom change.

Figure 20. *Changes in Rumination (RRS) Scores Based on PTSD Symptom Change by Condition*



Rumination patterns differed between conditions except among those who reported the most improvement in PTSD symptoms (blue); these latter individuals reported a sustained reduction in rumination. In the EW condition, the highest ruminators were also those whose PTSD symptoms were worse at 30 days (purple). In the DP condition, those who would report worse symptoms showed a temporary reduction in rumination but a return to baseline at 30 days. These patterns support the idea that resources consciously or unconsciously used to avoid high arousal during the intervention (such as dissociating or denying a current impact from past trauma) may have become exhausted at two or four weeks post, resulting in increases in intrusive thoughts, decreases in concentration, and other symptoms of PTSD that overlap with rumination.

For those who reported a small improvement in PTSD symptoms at final post (green), rumination patterns differed by treatment condition. In the EW condition, rumination ended below baseline while in the DP condition it rose above baseline. The EW pattern showed a pattern akin to habituation whereby rumination was higher immediately after the intervention but then reduced at 14 days and fell even lower at 30 days, suggesting habituation to trauma memories. In the DP condition, immediate post showed a reduction in rumination from baseline, but the 14-day post and 30-day follow-up showed increases and ended above baseline; since this group did not improve as much as others, this pattern suggesting ruminative thoughts may have begun to interfere with recovery.

Changes in negative expression during session. Under both conditions, change in expression of negative emotions was measured although in different ways. In the EW condition, the LIWC software (Pennebaker & Francis, 1999) was implemented to identify the percentage of words in the first and last written narratives that were negative emotion words. Similarly, in the

DP conditions, participants were shown a list of negative emotions at Step 2 and Step 12; the numbers endorsed at these steps were then converted to percentages for comparison with the EW condition. Mean percentages of negative words used are reported in Table 38 by intervention period for each condition and degree of PTSD symptom change.

Table 38. *Mean Percentage of Negative Words Based on Treatment Condition and PTSD Symptom Change Group.*

Treatment Condition	Intervention Period	Great Improvement	Some Improvement	No Change	Worse Symptoms
Expressive Writing	First Period (SE, 95% CI)	3.4% (2.6, -1.8 to 8.7)	3.3% (4.6, -5.9 to 12.6)	3.6% (5.5, -7.3 to 14.6)	2.9% (4.6, -6.3 to 12.2)
	Final Period (SE, 95% CI)	3.3% (1.4, -0.5 to 6.0)	3.8% (2.5, -1.1 to 8.7)	3.4% (2.9, -2.4 to 9.2)	3.4% (2.5, -1.5 to 8.3)
	Difference	-0.1%	0.5%	-0.2%	0.5%
Directive Protocol	First Period (SE, 95% CI)	30.2% (2.6, 24.9 to 35.4)	33.2% (5.0, 23.2 to 43.2)	23.2% (4.3, 14.5 to 31.8)	32.0% (6.1, 19.8 to 44.3)
	Final Period (SE, 95% CI)	7.7% (1.4, 4.9 to 10.4)	7.3% (2.7, 2.0 to 12.6)	9.1% (2.3, 4.6 to 13.7)	16.2% (3.3, 9.7 to 22.7)
	Difference	-22.5%	-25.9%	-14.1%	-15.8%

A repeated measures 2 (conditions) x 2 (assessment intervals) x 4 (levels of PTSD symptom change) ANOVA suggested that changes in negativity differed significantly based on time ($F(1, 73) = 43.54$, $p < .001$, *Partial Eta*$^2 = 0.37$); condition ($F(1, 73) = 59.08$, $p < .001$, *Partial Eta*$^2 = 0.45$); and the interaction of time and treatment condition ($F(1, 73) = 44.87$, $p < .001$, *Partial Eta*$^2 = 0.38$). However, the interaction of time, condition, and PTSD categories was not statistically significant ($F(3, 73) = 0.89$, $p = .453$, *Partial Eta*$^2 = 0.04$).

Changes in positivity during session. Mean percentages of negative words used are reported in Table 39 by intervention period and degree of PTSD symptom change.

Table 39. *Mean Percentages of Positive Words Based on Intervention Period, Treatment Condition, and PTSD Symptom Change Group.*

Treatment Condition	Intervention Period	Great Improvement	Some Improvement	No Change	Worse Symptoms
Expressive Writing	First Period (SE, 95% CI)	2.2% (1.3, -0.1 to 4.0)	2.6% (2.4, -2.2 to 7.3)	2.1% (2.8, -3.5 to 7.7)	2.8% (2.4, -2.0 to 7.5)
	Final Period (SE, 95% CI)	3.1% (1.9, -0.1 to 6.8)	2.8% (3.3, -3.8 to 9.4)	3.3% (3.3, -3.8 to 9.4)	3.0% (3.3, -3.6 to 9.6)
	Difference	0.9%	0.2%	1.2%	0.2%
Directive Protocol	First Period (SE, 95% CI)	10.6% (1.3, 7.9 to 13.3)	6.3% (2.6, 1.2 to 11.5)	8.3% (2.2, 3.9 to 12.8)	9.6% (3.2, 3.4 to 15.9)
	Final Period (SE, 95% CI)	17.3% (1.9, 13.5 to 21.0)	10.8% (3.6, 3.6 to 18.0)	9.9% (3.1, 3.7 to 16.1)	10.0% (4.4, 1.2 to 18.8)
	Difference	6.7%	4.5%	1.6%	0.4%

A repeated measures 2 (conditions) x 2 (assessment intervals) x 4 (levels of PTSD symptom change) ANOVA suggested that changes in positivity differed significantly based on time ($F(1, 73) = 6.38$, $p = .014$, *Partial Eta*$^2 = 0.08$) and treatment condition ($F(1, 73) = 16.68$, $p < .001$, *Partial Eta*$^2 = 0.19$). The interaction of time, treatment condition, and PTSD change type was not significant ($F(3, 73) = 1.10$, $p = .354$). As can be seen, both conditions and all PTSD change categories showed increases in positivity at the end of the intervention. In the DP condition, while not statistically significant, those who improved most and those who reported a moderate improvement both endorsed 5% more positive words than those who did not improve or reported worsening of symptoms.

Discussion of negative and positive emotional expression. While extensive research by Pennebaker and colleagues suggests that symptom improvement is associated with reductions in negative and increases in positive expression, in the present study these relationship were not found statistically. However, in the DP condition the two subgroups whose PTSD symptoms had improved at final post showed a 75% reduction in endorsement of negative emotions as opposed

to only a 50% reduction among those whose PTSD symptoms grew worse or remained close to their baseline score. This provides further evidence for habituation as a mechanism of change.

DISCUSSION

This study examined the effectiveness of two treatment protocols in reducing PTSD symptoms, depressive symptoms, and physical illness symptoms in a non-clinical sample. Both treatments showed clinically and statistically significant reductions in PTSD symptoms at 14-days post-intervention which were largely maintained at 30-day follow-up. The DP condition showed significantly larger reduction in symptoms than the EW condition. Physical illness symptoms also saw significant reductions under both conditions, with no significant differences between conditions. Depressive symptom reductions were significant for the DP condition but not for the EW condition. It should be noted, however, that baseline depression scores were only in the mild range.

When PTSD symptom change was examined in terms of frequency and severity, the distinguishing factor between treatment conditions was in the *frequency* of symptoms. Statistically, both conditions had comparable effects on the *severity* of symptoms. This suggests both conditions reduced severity to a comparable degree, but that DP participants reported fewer occasions of symptoms such as intrusive thoughts or dreams, or being on edge and easily startled. Additional variables were assessed to help understand mechanisms that could help explain such differences.

The treatment conditions were also explored for differing outcomes in PTSD diagnostic classification and for overall symptom changes. Unlike the ITT analyses above, categorizations were based on actual intervention received and final known scores rather than means estimated for missing data. Both conditions began with a comparable number of participants who would

have met PTSD diagnostic criteria according to a validated symptom cut-off score, and both saw a high percentage of people who no longer met the cut-off score for PTSD, with a slightly higher success ratio for the DP condition. Among those whose symptom scores would have retained the PTSD classification, symptoms were reduced under both conditions, and in the DP condition the mean reduction was nearly twice as high than the EW condition.

When considered regardless of PTSD cut-off scores at baseline, using last-known scores as the final post score, both conditions were evenly represented in these four groups: 53% of the sample showed a large reductions in symptoms; 15% reported a modest reduction in symptoms; 16% reported no substantive change; and 13% reported a worsening of symptoms. Exploration of group baseline differences showed that in the DP condition the latter two groups had begun with significantly lower symptom scores than those who would improve the most. This would seem to support a philosophy of not providing trauma treatment to victims who present with minimal symptomatology. However, this baseline difference was not found in the EW condition, and the findings regarding arousal levels during the interventions suggest that affective non-engagement may have interfered with symptom reduction. If these obstacles can be identified and mitigated during active treatment, more people might benefit from treating their trauma symptoms rather than leaving them unaddressed.

Questions regarding mechanisms of change were anticipated by the present study and several variables were assessed to help answer them. Among them were in-session differences in patterns of arousal or distress (SUDS scores) throughout the intervention. These were further differentiated based on the outcomes in PTSD symptom change. In the EW condition, the most improved group showed a SUDS pattern suggestive of habituation (i.e., immediate increases in arousal at the beginning of writing periods and decreasing peak levels at subsequent writing

periods). The moderately improved and no-change groups showed plateaus before reaching peak arousal levels, suggesting avoidance, and peak patterns that were unclear regarding habituation. The group that reported worsening of symptoms showed the lowest peaks throughout, and increasing distress at the end of the intervention, which is also incongruent with habituation. Thus, while several groups may have demonstrated an in-session decrease in arousal in the presence of trauma memories, only the most improved group showed a pattern that suggests habituation. In addition, only the most improved group showed evidence of habituation in its pattern of follow-up assessments. The other groups appeared to move toward habituation and then showed signs of re-sensitization to trauma cues.

In the DP condition, the SUDS pattern for the most improved group could be indicative of habituation to *emotions* cued by the trauma; however, the protocol structure, which placed the full trauma narrative in the final section, may have obstructed better evidence for habituation. Nevertheless, the reduced PTSD symptoms at all follow-up assessments suggest that habituation did, in fact, occur.

The group with modest improvement showed similar in-session arousal levels as the most improved group, distinguished only by greater arousal during the cognition challenging section. It may be that this group had more unresolved disturbing cognitions regarding their trauma. The no-change group was remarkable for its very high levels of arousal throughout, which suggested willingness to engage with their trauma but lack of achieving habituation despite the exposure. This highlighted important questions regarding the identification and removal of potential obstacles to trauma recovery; it may counterproductive to use exposure with individuals who lack resources to benefit from it.

Lastly, the group that reported worsening of symptoms may also have had barriers to habituation. Their in-session SUDS pattern was remarkable for very low peaks and also very low valleys after breaks, as if they were able to affectively disengage from their feelings or thoughts about the trauma despite cognitive acknowledgement of them. Yet it is also unclear whether the seeming lack of engagement was due to conscious efforts or other factors. An argument for conscious denial, minimization, or dismissal of the trauma and its impact would have been plausible if these individuals had endorsed significantly fewer negative emotion words than the improved group, but this was not the case. In fact, at the close of the DP intervention they endorsed many more negative emotions than the other groups. They also did not "gloss over" their trauma by endorsing more positive words than others. It seems more plausible that some level of dissociation occurred by which very negative cognitions simply did not cause much arousal during the intervention, but that such dissociation did not continue during subsequent weeks. This was supported by findings that in both conditions, the worsened-symptom group reported the highest levels of alexithymia. The DP condition was associated with a significant decrease in alexithymia overall, but the worsened-symptom group showed a substantive increase after 14 days.

Regarding the other factors assessed, individuals who reported being more prone to rumination and/or suppressing of unwanted thoughts, and/or less accepting of their trauma, generally showed less reduction in PTSD symptoms at 30 days post-intervention than those with lower rumination and thought suppression scores, and higher cognitive acceptance scores. However, self-reports on acceptance and rumination may not have been reliable. In the DP condition, those who reported least improvement or even increases in PTSD symptoms also endorsed *increases* in cognitive acceptance of their trauma at 30 days post-intervention. In

contrast, their first and last reports of thought suppression were both fairly high, and behaviorally their reports of distress during the intervention appeared rather subdued, suggesting difficulty achieving genuine acceptance of their trauma and allowing corresponding emotions to be experienced and achieve habituation.

Regarding the DP's designed intention to promote changes in thought suppression, acceptance, rumination, and alexithymia, the results suggest the DP condition yielded significant improvements in all four. However, the improvements were only significantly better than those of the EW condition for thought suppression and acceptance, and for rumination at 14 days but not at 30 days. In addition, regarding acceptance and rumination, the DP condition may have suffered demand effects. Some participants may have exaggerated their increases in acceptance and their reductions in rumination since these were promoted as healthy and desirable. Nevertheless, high levels of thought suppression, rumination, and alexithymia, and low levels of acceptance, were associated with PTSD symptom maintenance and deterioration, and the evidence shows that the DP condition succeeded to some degree in their manipulation.

Overall, both treatments offer great potential in helping victims of trauma to reduce PTSD symptoms. The DP condition demonstrated additional effects associated with addressing potential barriers, and such techniques or treatment targets could be further improved or developed to reduce their influence during other trauma interventions. For example, expressive writing protocols could be written to include lists of emotion words, and psychoeducation about thought suppression and affective dissociation could be provided to improve the likelihood that participants not engage in safety behaviors that obstruct exposure and habituation.

Lastly, this study offers strong initial support for the argument that in the space of as little as two hours, much can be done to reduce PTSD symptoms. This was true whether or not the

participant engaged with the therapist or primarily spent most of the time writing. As a personal observation, participants generally left these sessions remarking they were “exhausted”, with nothing more to write or say. That in itself may be a testimony to an additional benefit from massed rather than distributed exposure.

LIMITATIONS

This study has several potential limitations:

Therapist interaction. The DP and EW conditions were not equivalent in terms of therapist interaction. In both conditions, the therapist/researcher was present to answer questions and ensure adequate understanding of the protocol instructions. However, given the simplicity of EW instructions, few questions were asked. In the DP condition, the entire session involved therapist guidance, feedback, and prompting. This inequality in therapist interaction was justified because what was primarily being tested and compared in this study was the degree to which symptom change could be achieved in the same limited time provided by EW protocols.

Assumptions. This study assumed the construct validity of PTSD, and that a large percentage of victims of trauma would have a history of physical illness complaints. It also assumed that cognitive and emotional avoidance would be associated with PTSD symptoms. In addition, this study assumed that the instruments utilized were valid, reliable measures of behaviors, psychological constructs, and psychopathologies such as PTSD.

This study further assumed that a traumatic memory would have identifiable stimuli or "triggers", and that trauma involves many of these features: intrusive thoughts/dreams of the event, psychological distress and physiological arousal caused by reminders of the event, avoidance of thoughts/places/reminders, restricted affect, foreboding about the future, irritability and outbursts of anger, hypervigilance, difficulty concentrating, being easily startled, and difficulty sleeping. This study assumed independence of groups and that participants would not

communicate with each other. A normal distribution of responses was also assumed, and data were transformed to better approximate normal distributions.

Internal validity. Random assignment was used to minimize the impact of individual differences, yet this method assumes that differences were balanced by this process.

Missing data/attrition. Several post-assessment scores were not completed by participants and estimation techniques were incorporated. Patterns for missingness were identified but mechanisms for missingness were impossible to determine conclusively, and thus some of the estimates may be biased by the estimation techniques.

Testing effects and instrumentation. The hypotheses of this study assumed that prolonged exposure to assessment instruments themselves could foster habituation and cognitive processing and thereby alter symptom outcomes regardless of treatment condition. For this reason, assessment instruments were selected that minimized consideration of specific details or emotions related to the trauma. However, there may have been an effect from the contacting of participants at 14- and 30-day posts that may not be present when these treatments are administered outside the context of a study.

External validity. There were several limitations to external validity or generalizability. First, this study was limited by not requiring participants to meet criteria for a PTSD diagnosis; only sufficient severity of symptoms was required to be able to assess for clinically significant changes. Thus, results may not generalize to individuals diagnosed with PTSD.

Perhaps a greater threat to generalization of findings, participants might previously have: received treatment or talked to others about their trauma; engaged in "healthy" practices such as keeping a journal, meditating, or practicing mindfulness; experienced numerous traumas or a single event; and/or the trauma may have occurred recently or many years prior to this study

(i.e., maturation may differentiate subjects). Yet the allowance of these differences, and the randomization process, may also strengthen the generalizability of these results.

Lastly, results from interventions with 18-24 year-old college students may not apply to people with alternative educational backgrounds, or to younger adolescents or older adults, or to ethnicities that differ from the studied sample. In addition, the setting of a university laboratory, the incentive of research credit and a possibly winning a $50 gift card, the presence of researchers, and the careful administration of, and adherence to, protocols may have influenced results. Different results may occur under less controlled conditions, without the presence of researchers, without course-credit or financial incentives, and in environments such as community mental health centers where other treatments may be offered concurrently.

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LIST OF APPENDICES

APPENDIX A: GROUP INSTRUCTIONS

Group A instructions

Session 1, 2, & 3:
On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

For the next 30-35 minutes, I would like you to write your very deepest thoughts and feelings about the most disturbing or traumatic experience of your entire life. In your writing, I'd like you to really let go and explore your very deepest emotions and thoughts. You might tie this trauma to your childhood, your relationships with others, including parents, romantic partners, friends or relatives. You may also link this event to your past, your present or your future; or to who you have been, who you would like to be, or who you are now. After a break I will ask you to write for 25 minutes again, [and then a third time as well]. You may write about the same general issues or experiences during each writing session or choose different topics each time. Not everyone has had a single trauma but all of us have had major conflicts or stressors – and you can write about these as well. All of your writing will be completely confidential. Don't worry about spelling, grammar or sentence structure. The only rule is that once you begin writing, you continue until the time is up. You may begin.

(At 8, 16, and 24 minutes)
Since the last time I asked, on a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what has been your highest level of distress? ____

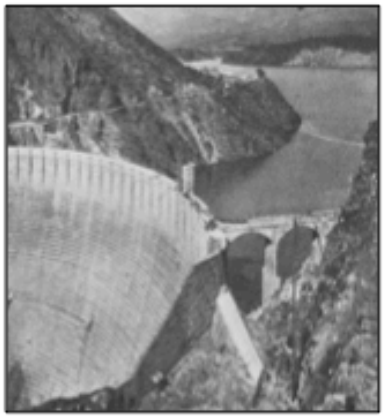
(After 30-35 minutes)
We are now going to take a 10 minute break. However, before we do, I'd like to get a rating of how you felt during the writing. On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress during this exercise? ____

Group B instructions.

(Directive Protocol)

Step 1

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____



Sometimes we use our intelligence to "dam up" things that would be better left to run their course and be drained. We spend a lot of energy building and maintaining walls that are under a lot of tension—just to look calm and "put together" on the outside or to try to live a "normal" life.

Of course, we do let some things flow. When you exercise you probably don't fight to keep your heart from beating faster, or your breathing from becoming faster and shallower, or your body from getting sweaty. We let those things happen naturally.

That is because we understand that our brain is quietly regulating those things for our own good. We also know that they are only *temporary* adjustments and they will stop when they are no longer perceived by our brain as necessary. That activity is called "autonomic" which is similar to automatic: they don't require conscious orders or even awareness.

Yet other bodily reactions sometimes disturb us and we try to suppress them. For example, we might force ourselves to avoid crying despite a great personal loss or injury. Or we might work hard to avoid situations that could trigger fear, sweat, light-headedness, or sadness. It is as if we expect that those bodily reactions—feelings—will last forever if we allow them in.

But that is incorrect. Your body cannot sustain those reactions for very long. If you ride them out, at some point your autonomic brain stops calling for them. And by not resisting them, this reduction in tension may actually improve your health and lead to making better decisions and being less restricted in your activities. Of course, it takes some practice to observe the way your autonomic system responds to things on your mind.

EXERCISES – NOTICING & INFLUENCING OUR AUTONOMIC SYSTEM

1. Close your eyes and vividly *imagine* you're cutting open a lemon. A big… ripe… juicy lemon and tasting a slice, right to your lips. Can you feel your mouth water? ___Yes ___No

2. Now *imagine* yourself jogging. Do it so vividly… speeding up… that your breathing becomes more constricted or you feel warmer… Were you able? ___Yes ___No

If your mouth salivated in response to *imagining* tasting a lemon, then you experienced the interplay of your *thoughts* and autonomic responses. Similarly, if your thoughts about jogging were vivid enough, they triggered unconscious orders such as to breathe faster or for your heart to pump blood to your muscles faster, resulting in greater warmth. Now try one more exercise:

3. Take a deep breath and relax... Drop your shoulders... Drop your shoulders more if they will go… Even more this time, really let your arms and shoulders relax... Isn't it funny that you had to give 3 commands to get more fully relaxed? Each time your autonomic system kept a certain amount of tension until you ordered it to relax even further. By noticing that tension and ordering ourselves to *experience the weight of our arms* we get to an even deeper relaxation.

Similarly, we can learn to catch ourselves exerting effort to avoid certain memories or block painful emotions. These efforts and tensions might be keeping you from fully adjusting to, or recovering from, the disturbing things you have experienced. Of course, if you are still in danger then you should stay vigilant and not do this. But if you are safe, and yet you are troubled every time something reminds you of your disturbing events, then you can work to reduce these reflex-type responses. It begins by letting your body *process* and *feel the weight* of what you have been through. Naturally, recalling these events may be unpleasant at first, just like the first time you go running, but after a while you will soon be breathing and reacting more normally.

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 2

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Imagine sleeping next to a loud refrigerator. Covering your ears or fighting the noise would probably not bring you much peace. Instead, allowing it in, paying close attention, or even humming along would probably lead to it becoming "background noise". Disturbing memories can also become like background noises that you no longer react to as much.

This protocol is not appropriate if you are currently in danger, such as living with an abuser. But if you are safe, far from where your disturbing event occurred, yet you have strong reactions to reminders of the event, then this exercise can help reduce those reactions.

It begins by identifying, allowing, and *riding out* feelings you might not generally allow—or acknowledge—which are associated with your disturbing event. These feelings may be overpowering at first, yet eventually the absence of real danger *here* makes them lessen—difficult to sustain—over time. It's as if your autonomic side needs to experience that safety *while* those memories are also present, which can take some time to reconcile.

Any questions? (Y/N) This will not work if you deny or hold back feelings. When you are ready, try to visualize the most disturbing or traumatic event you have ever experienced. Try to put yourself there as if it's all happening right now (use the present tense). Let your heart beat faster if it wants to. Don't hold back tears, etc. Skip words that are unfamiliar or don't apply to you.

Tell yourself: ***"I am back there and as I see it happening I am feeling…"*** (Circle words)

Surprised	Powerless	Freakish	Furious	Polluted	Challenged
Shocked	Violated	Fake	Hateful	Cheap	Overwhelmed
Disbelieving	Castrated	Grotesque	Resentful	Ashamed	Avoidant
Confused	Disrespected	Abnormal	Distrusting	Blameworthy	Intimidated
Ambushed	Helpless	Burdened	Tired	Regretful	Jumpy
Isolated	Insignificant	Stressed	Cold	Guilty	Fearful
Abandoned	Miserable	Reckless	Empty	Battered	Scared
Alone	Devastated	Blind	Numb	Abused	Shaky
Forgotten	Broken	Dumb	Distant	Bullied	Sickly
Sold	Off Balance	Ignorant	Detached	Attacked	Queasy
Hated	Ruined	Foolish	Lifeless	Hurt	Anxious
Robbed	Lost	Idiotic	Dead	Bruised	Nauseated
Cheated	Cursed	Stupid	Adrift	Heartbroken	Sweaty
Deprived	Imprisoned	Gullible	Meaningless	Sad	Tense
Disgusted	Mutilated	Pathetic	Unloved	Unlucky	Terrified
Deceived	Charred	Absurd	Unlovable	Pessimistic	Cowardly
Brainwashed	Crippled	Ridiculous	Rejected	Discouraged	Spineless
Betrayed	Choked	Humiliated	Neglected	Crushed	Stuck
Manipulated	Damaged	Mocked	Overlooked	Depressed	Trapped
Coerced	Handicapped	Embarrassed	Friendless	Bitter	Paralyzed
Exploited	Unfixable	Belittled	Unvalued	Cynical	Conflicted
Naked	Hopeless	Scolded	Unsupported	Faithless	Oppressed
Exposed	Despairing	Accused	Unheard	Fed Up	Overworked
Vulnerable	Futureless	Judged	Unvalidated	Tormented	Punished
Defenseless	Doomed	Condemned	Silenced	Troubled	
Unprepared	Defeated	Misunderstood	Worthless	Unclear	
Unsafe	Defective	Frustrated	Disposable	Uneasy	
Weak	Flawed	Annoyed	Dirty	Uncomfortable	
Tiny	Useless	Angry	Filthy	Exhausted	

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 3

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

It's also important to acknowledge positive feelings that you might experience.
"On the positive side, when I think about my traumatic or disturbing experience, I also feel…"

Encouraged
Positive
Recovering
Processing
Liberated
Absolved
Renewed
Clear
Coherent
Harmonious
Closure
Authentic
Genuine
Complete
Clean
Beautiful
Cured
Balanced
Fixed
Free
Human
Normal
Lovely
Compassionate
Generous
Sorry
Charitable
Forgiving
Likable
Merciful

Competent
Intelligent
Educated
Able
Confident
Surviving
Conquering

Connected
Accompanied
Close
Acknowledged
Recognized

Affirmed
Appreciated
Belonging
Reconciled
Reconnected
Supported
Loved
Lovable
Loving
Optimistic
Hopeful
Cheerful
Brightened
Content
Delighted

Calm
Capable
Accepting
Operational
Present
Mindful
Interested
Knowledgeable
Relaxed
Released
Rewarded
Relieved
Motivated
Determined
Committed
Driven
Focused
Assertive
Brave
Fearless
Bold
Accomplished
Achieving
Fruitful
Devoted
Enduring
Firm
Tenacious

Effective
Dependable
Equal
Fulfilled
Prepared
Lucid
Insightful
Aware
Enlightened
Inspired
Sharpened
Purposeful
Put Together
Spirited
Strong
Fortunate
Blessed
Lucky
Grateful
Joyful
Honored
Touched
Proud
Celebratory
Enthusiastic
Excited
Humbled
Glorified
Happy
Praising
Noble

Hardened
Persistent
Purified
Experienced
Mature
Wise
Ready
Believing
Blameless
Considerate
Caring
Cherishing

Comfortable
Comforted
Protected
Treasured
Immunized
Resilient
Rugged
Seasoned

Recharged
Reassured
Rebounding
Passionate
Rebuilding
Successful
Sturdy
Hardworking
Stable
Fixable
Exceptional
Superior
Extraordinary

Courageous
Dignified
Energetic
Faithful
Familiar

Flexible
Flourishing
Forthright
Radiant
Serene
Transformed
Transcendent
Triumphant
Tranquil
Tall
Rested
Safe
Sane
Satisfied
Secure

Whole
In Control
Undisturbed

Adventurous
Amused
Amazed
Fun
Limitless

Useful
Productive
Resourceful
Healed
Open
Patient
Nostalgic
Nurturing
Undefeated

Thoughtful
Peaceful
Penitent
Profound
Realistic

Vindicated
Understood
Validated
Respectable
Significant
Vibrant
Victorious

Redeemed
Reflective
Refreshed
Regenerated
Rejoicing
Upbeat
Valiant
Warm
Whimsical
Youthful

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 4

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Sometimes we ask *why* something happened to us, or make *negative predictions* about our future, or we are disturbed about *who is responsible* for the event(s), including God. Circle and write in **thoughts that bother you or haunt you** regarding your most disturbing event. Once again, don't hold back any emotions that arise. Let them ride themselves out.

- *(Maybe) I should have* _____.
- *(Maybe) I should NOT have* _____.
- *If only* _____.
- *If only* _____.
- *Why* _____?
- *Why* _____?
- *Why* _____?
- *I can't believe* _____.
- *Where was* _____ *when this was happening?*
- *Where was* _____ *when this was happening?*
- *How could* _____?
- *I'm so* _____.
- *I'll always be* _____.
- *I feel like such a(n)* _____.
- _____ *being punished for something.*
- *It was my fault. I deserved it. I'm just a(n)* _____.
- *Now I'll probably never* _____.
- *This will probably keep me from* _____.
- *No one I know can understand what I've been through.*
- _____
- _____

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 5

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Building on the last exercise, what is your worst or most disturbing conclusion about what your disturbing experience(s) mean(s) about you, your future, or the world? For example, "Because this thing has happened, now I will never have a normal life." Or, "I am basically defective."
As usual, do not hold back feelings, tears, heart beating faster, etc.

My worst conclusion: _____

_____

What evidence *supports* this negative conclusion? (E.g., "My last romantic relationship broke up because this trauma has made me be afraid of getting too close to someone again.")

_____

_____

What are some *exceptions* to the negative evidence or conclusion? (E.g., "I was at least able to *start* a romantic relationship even if it did not last as long as I wanted.")

_____

_____

Depressing thoughts can keep us from seeing things more objectively. It is important to learn to question some of our ideas and even cross-examine them, like in court.
What other negative or haunting thoughts are tied to your disturbing event(s)?

Negative predictions or thoughts	Evidence that supports this thought or prediction	Exceptions to the negative prediction or thought

Disturbing events can make us feel very isolated. How could some acquaintances or family members be turned into closer friends? What are 3 things you would advise a friend in your circumstances in order to connect more with others?

- _____
- _____
- _____

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 6

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Blaming a very specific person or cause may contribute to keeping disturbing events present and powerful in our lives. (This includes *shame* and *guilt* when the blame is on us.) Researchers have found that diffusing these, while still acknowledging the degree of evil or injustice that has occurred, can help us move on with our lives better.

For example, imagine you are driving and another car slams into you and then races off. Perhaps you even get hurt and need medical attention. You might feel anger towards that driver, not only at first but every time you recall the incident. However, imagine later you found out that the other driver was racing to the emergency room, bleeding to death. This new piece of information would probably lessen your anger, even though the harm to you and your car had been real and undeserved.

Or imagine you were that bleeding driver and ran over a child. You might have trouble accepting that you could do such a thing, while others would understand that you cannot be bleeding to death and still function at a normal level. It's hard to accept how impaired we can be.

Thinking about your disturbing event, could any of the following be true about those you hold responsible? Could there have been some handicaps, limitations, or other factors that kept individuals from acting as fully functioning healthy adults? Possibly? (*circle the bullets*)

- They/I were/was **very young** (even though we thought we were mature).
- They/I were/was had **a mental situation** that kept them from functioning normally.
- They/I had been severely **abused** and never got treatment for it.
- They/I were/was **too young or scared to know what to do** about the situation.
- **Nothing had prepared** them/me for such an experience.
- The situation was very **confusing** and they/I **did not know whom to turn to**.
- They/I were/was **overwhelmed** by pressures coming from all sides.
- They/I **did not have the coping skills** needed for that situation.
- They/I were/was **addicted** to something that had a powerful hold on them/me.
- They/I had gone **too many days without enough sleep**.
- They/I **would know what to do now** but **didn't know back then**.
- The situation was **inevitable under those circumstances**, even though it's different now.
- I/they were **unable to listen or understand at the time**, but this can change.
- They/I did not seek professional help **but can now**.

Think of 3 special circumstances that would give you some peace about what occurred. Three things that if you "found out" would make you less shocked about what occurred. (For example, after a perpetrator's death the autopsy shows they had a rare disease that caused that behavior. Or it turns out the person had a mental illness. Or that something was keeping you from a better action.) Keep in mind that what occurred is still terrible, there is no need to minimize it.

- _____
- _____
- _____

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 7

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

There are probably names, images, odors, sounds, and other sensory things that you would rather forget and never experience again. They probably have the power to "trigger" your disturbing memories, dreams, and emotions—and not always consciously. This exercise is about *undermining* that power and making those triggers or cues go limp.

As with an annoying refrigerator, shutting out their "noise" will probably not result in you being at peace when you do encounter them. And trying to avoid all reminders can really limit your life. Instead, looking right at reminders over and over again, and on many more occasions than the anniversary of the event, will make them less tied to any single memory or event.

For example, there may have been a doorway where your event occurred, but your daily experience of doorways probably keeps doorways from being a trigger for that memory. However, maybe *red* doors still get your attention and you try to never see red doors. That avoidance might be keeping the association *strong* between red doors and your disturbing memory. Instead, if you look for red doors and find many you might weaken the "meaning" of red doors in your life.

Recalling sensory details about your experience can be uncomfortable. As you do this exercise, remember to let any accompanying feelings ride themselves out. Your autonomic side will "catch up" and realize that you are not in danger. ***Picturing yourself living through the event(s), list <u>everything</u> you can recall (and reminders) in terms of:***

1. Sounds

2. Smells

3. Touch

4. Tastes

5. Sights

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 8

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Some people say looking back, they *learned* something from a disturbing experience. Write at least 3 *positive* things you've *realized* or *learned* since your most disturbing event. For example:

- I have since realized…
- I am more prepared now. Next time I would…
- Advice I would give to someone else in similar circumstances would be…

_____

_____

_____

_____

Acceptance of what occurred, and allowing thoughts and emotions to come and go without fighting them, are 2 important steps in recovery. Imagine yourself as a **much older person** having achieved that *acceptance* and *willingness to recall*. What would your relationship with your disturbing event(s) probably look like in 10, 20, 30 years?

(Still) denying it ever really happened.	Yes	No	Maybe
Acting as if it did not affect me much.	Yes	No	Maybe
(Still) desperate to know *why* it happened.	Yes	No	Maybe
(Still) restless to know why it happened *to me*.	Yes	No	Maybe
Actively rejecting any thoughts about it.	Yes	No	Maybe
Quietly avoiding thoughts about it.	Yes	No	Maybe
Seeking distractions from it.	Yes	No	Maybe
Getting upset at reminders of it.	Yes	No	Maybe
Focused on blaming someone.	Yes	No	Maybe
Resigned to the fact that it happened.	Yes	No	Maybe
Accepting that it happened.	Yes	No	Maybe
Feeling the strength of a survivor.	Yes	No	Maybe
(Still) hoping that memories will stay tucked away and not bother me again.	Yes	No	Maybe
Open to memories and reminders coming and going.	Yes	No	Maybe
Willing to examine aspects that still bother me and "ride out" related feelings.	Yes	No	Maybe
Willing to discuss the event(s) with others.	Yes	No	Maybe
Feeling like a stronger person overall.	Yes	No	Maybe
Feeling triumphant towards what could have left me hopeless for the rest of my life.	Yes	No	Maybe
Ready for whatever else life brings.	Yes	No	Maybe
Ready to help others benefit from my experience.	Yes	No	Maybe
Unintimidated by the possibility of other difficulties.	Yes	No	Maybe
Accepting of suffering.	Yes	No	Maybe
Unintimidated by life.	Yes	No	Maybe

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 9

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Now it's time to put it all together into 1 coherent story. Include details of what happened, who was involved or missing, how old you were, what you heard, saw, smelled, tasted, and felt. Also what you were thinking at each moment, and what bodily reactions and emotions you were having. Include things from the previous pages that help tell the complete story.

Tell it like a movie, as if it's happening right now, and write ***details*** *that put you back there*. At the end, include things you have learned from this experience. Do not worry about grammar or even full sentences; key words are enough.

Ex: *I am 5. My mom, her boyfriend, my 2 brothers are in the car. It's a green Ford Escort. Smells like gasoline. We're late, going fast. Rain, puddles. Noise of splashing...*

(Continue on as many pages as necessary to tell your whole story.)

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 10

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

This is a chance to let your mind and body acknowledge current feelings. As you identify emotions **you are feeling right now**, "enter into" them as much as possible. Consider each word slowly and don't hold back any bodily reactions.

Surprised	Miserable	Stupid	Overlooked	Troubled
Shocked	Devastated	Gullible	Friendless	Unclear
Disbelieving	Broken	Pathetic	Unvalued	Uneasy
Confused	Off Balance	Absurd	Unsupported	Uncomfortable
Ambushed	Ruined	Ridiculous	Unheard	Exhausted
Isolated	Lost	Humiliated	Unvalidated	Challenged
Abandoned	Cursed	Mocked	Silenced	Overwhelmed
Alone	Imprisoned	Embarrassed	Worthless	Avoidant
Forgotten	Mutilated	Belittled	Disposable	Intimidated
Sold	Charred	Scolded	Dirty	Jumpy
Hated	Crippled	Accused	Filthy	Fearful
Robbed	Choked	Judged	Polluted	Scared
Cheated	Damaged	Condemned	Cheap	Shaky
Deprived	Handicapped	Misunderstood	Ashamed	Sickly
Disgusted	Unfixable	Frustrated	Blameworthy	Queasy
Deceived	Hopeless	Annoyed	Regretful	Anxious
Brainwashed	Despairing	Angry	Guilty	Nauseated
Betrayed	Futureless	Furious	Battered	Sweaty
Manipulated	Doomed	Hateful	Abused	Tense
Coerced	Defeated	Resentful	Bullied	Terrified
Exploited	Defective	Distrusting	Attacked	Cowardly
Naked	Flawed	Tired	Hurt	Spineless
Exposed	Useless	Cold	Bruised	Stuck
Vulnerable	Freakish	Empty	Heartbroken	Trapped
Defenseless	Fake	Numb	Sad	Paralyzed
Unprepared	Grotesque	Distant	Unlucky	Conflicted
Unsafe	Abnormal	Detached	Pessimistic	Oppressed
Weak	Burdened	Lifeless	Discouraged	Overworked
Tiny	Stressed	Dead	Crushed	Punished
Powerless	Reckless	Adrift	Depressed	
Violated	Blind	Meaningless	Bitter	
Castrated	Dumb	Unloved	Cynical	
Disrespected	Ignorant	Unlovable	Faithless	
Helpless	Foolish	Rejected	Fed Up	
Insignificant	Idiotic	Neglected	Tormented	

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 11

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

On the positive side, when I think about my traumatic or disturbing experience, at this point I am also feeling…

Encouraged
Positive
Recovering
Processing
Liberated
Absolved
Renewed
Clear
Coherent
Harmonious
Closure
Authentic
Genuine
Complete

Clean
Beautiful
Cured
Balanced
Fixed
Free
Human
Normal
Lovely

Compassionate
Generous
Sorry
Charitable
Forgiving
Likable
Merciful

Competent
Intelligent
Educated
Able
Confident
Surviving
Conquering

Connected
Accompanied

Close
Acknowledged
Recognized
Affirmed
Appreciated
Belonging
Reconciled
Reconnected
Supported
Loved
Lovable
Loving

Optimistic
Hopeful
Cheerful
Brightened
Content
Delighted

Calm
Capable
Accepting
Operational
Present
Mindful
Interested
Knowledgeable
Relaxed
Released
Rewarded
Relieved
Motivated
Determined
Committed
Driven
Focused
Assertive
Brave
Fearless
Bold

Accomplished

Achieving
Fruitful
Devoted
Enduring
Firm
Tenacious
Effective
Dependable
Equal
Fulfilled
Prepared

Lucid
Insightful
Aware
Enlightened
Inspired
Sharpened
Purposeful
Put Together
Spirited
Strong

Fortunate
Blessed
Lucky
Grateful
Joyful
Honored
Touched
Proud
Celebratory
Enthusiastic
Excited
Humbled
Glorified
Happy
Praising
Noble

Hardened
Persistent
Purified

Experienced
Mature
Wise
Ready
Believing
Blameless
Considerate
Caring
Cherishing
Comfortable
Comforted

Protected
Treasured
Immunized
Resilient
Rugged
Seasoned

Recharged
Reassured
Rebounding
Passionate
Rebuilding
Successful
Sturdy
Hardworking
Stable
Fixable
Exceptional
Superior
Extraordinary

Courageous
Dignified
Energetic
Faithful
Familiar

Flexible
Flourishing
Forthright
Radiant

Serene
Transformed
Transcendent
Triumphant
Tranquil
Tall
Rested
Safe
Sane
Satisfied
Secure
Whole
In Control
Undisturbed

Adventurous
Amused
Amazed
Fun
Limitless

Useful
Productive
Resourceful
Healed
Open
Patient
Nostalgic
Nurturing
Undefeated

Thoughtful
Peaceful
Penitent
Profound
Realistic

Vindicated
Understood
Validated
Respectable
Significant
Vibrant

Victorious

Redeemed
Reflective
Refreshed
Regenerated
Rejoicing
Upbeat
Valiant
Warm
Whimsical
Youthful

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

Step 12

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), how are you feeling right now? ____

Throughout these exercises you learned a few principles and practiced several skills that you can take with you.

1. Awareness that what is on your mind often affects your physical life (imagining a lemon produced saliva, imaging running affected your breathing or heart rate). We may not be able to control what pops into our head, but we can make choices about allowing or fighting it.

2. You experienced that negative feelings are not permanent, they simply come and go. In fact, if we are actually safe, many tend to dissipate sooner if we identify them, let ourselves feel them, and not try to block, ignore, or rush them.

3. If allowed in and experienced, negative feelings regarding disturbing memories are often not quite as strong the second time, and even less the time after that. No matter how disturbed you become, if you just ride them out, at some point you'll be breathing normally again. If this is repeated or done in various times or places, the association usually becomes weakened.

4. Negative experiences can make us biased toward expecting many more negative things in our lives. But thoughts are not facts. Troubling conclusions and predictions need to be *identified* and then *cross-examined*. Evidence *for* and *against* their accuracy or likelihood should be considered. This helps achieve a more objective outlook. This can also initiate problem-solving and doing things differently.

5. A particular area that can disturb us involves anger, blame, shame, and/or guilt. By understanding the "bigger picture" of all the circumstances involved, including things that occurred in the past, we might realize that the disturbing experience(s) can rarely be attributed to a single cause. We humans are limited in so many ways and it's not easy to accept the outcomes of those limitations.

6. You have been willing to examine specific memories and sensory cues carefully, and you have put the whole experience together into more of a coherent, logical memory. This could help undermine its power to interest you and threaten you. By letting these memories and feelings come and go, and considering them more often than on their anniversaries or when triggered by things outside our control, they lose their ability to be unexpected or alarming.

7. You have identified positive things that have occurred despite your very disturbing experience. No matter what happens on the outside, you have first-hand experience that you are not controlled by your circumstances, or even by your thoughts and feelings. They cannot stop you from living a life you value.

8. What are some things you are more hopeful about? _____

_____

_____

On a scale of 0 to 100 (0=calm, 100=very bothered or distressed), what was your highest level of distress on this page? ____

APPENDIX B: INFORMED CONSENT

CONSENT FORM

Consent to Participate in an Experimental Study
Title: Trauma and Writing

Investigator
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University, MS 38677
falessan@go.olemiss.edu
443-370-2606

Advisor
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Department of Psychology
The University of Mississippi
310D Peabody Building
University, MS 38677
pykac@olemiss.edu
662-915-5195

☐ *By checking this box I certify that I am 18 years of age or older.*

Description
We are comparing therapeutic exercises that have been associated with helping people be less affected by events in their past. As a participant, you will be asked to do the following:

1. Answer questions online about your attitudes, health, behaviors, and disturbing or traumatic experiences in your life (15 to 30 min each, per the schedule below). **Some of the questions may be regarded as sensitive, such as smoking, alcohol and illegal drug use, suicidality, and use of counseling services.**

2. Participate in an in-person "treatment" session based on written exercises (100-120 minutes). You will be randomly assigned to one of two treatment conditions. If one condition is found to be more effective than the other, those in the less effective treatment condition will be offered the other treatment. **This in-person session will be videotaped or audio- recorded for periodic review to ensure that all researchers conduct these sessions as designed. Recordings will be kept in a locked file cabinet in a locked office in a locked building; they will be destroyed upon the conclusion of the study (approximately December 2015). Only the PI, his advisor, and 2-3 coders will review them.**

3. After the session, and again at 14 and 30 days later, participants will complete post-test measures online. E-mails with the appropriate link will be sent.

Thus the schedule will be:
a. Complete an online questionnaire before your in-person session (15-30 min).
b. Experience the in-person session (100-120 minutes).
c. Complete an online questionnaire within 24 hours after your in-person session (15-30 min).
d. Complete an online questionnaire 14 days after your in-person session (15-30 min).
e. Complete an online questionnaire 30 days after your in-person session (15-30 min).

Risks and Benefits
Potential benefits are that your physical and/or psychological health may improve or you may become more resilient to negative events in life. Foreseeable risks are that some of the subject matter may make you uncomfortable or distressed, particularly when recalling disturbing or traumatic events in your life. **If you are currently in treatment, YOU SHOULD FIRST talk to your therapist about whether or not participation in this study is consistent with your therapy goals.**

Alternative Treatments
There are alternatives to this study for addressing symptoms related to disturbing or traumatic experiences in your life. These generally consist of techniques that aim to get you to perceive the traumatic experience and symptoms in a different way (for example, Cognitive Processing Therapy) or to reduce the anxiety and distress associated with the traumatic experience (for example, imaginal exposure). Treatment outside of the experiment is available on campus at the Psychological Services Center (662-915-7385) or University Counseling Center (662-915-3784).

Compensation and Costs
The only cost to you is your time and effort. In compensation, for every 15 minutes of participation, you will receive 15 minutes of research credit that can be applied to fulfill research requirements in psychology courses in the Psychology Department of the University of Mississippi. This will be prorated in 15-minute segments that are earned each time participation reaches 7 minutes into a new 15-minute segment.

Total anticipated participation time is 3.5-4 hours. In addition, after the in-person session, for the final two questionnaires you complete attentively, you will be entered to win a $50 Gift Card (even if you have won it before; 1 in 80 chance of winning each time). Winners will individually decide whether to make it for Target, Amazon, Starbucks, or another similar vendor.

Confidentiality
Instead of using your name, you will be assigned a unique study ID to be used for logging in to the online questionnaires before, during, and after the writing session. The list that links your name to your study ID will be kept in a locked file cabinet in a locked office in a locked wing of an undisclosed academic building, and this list will be destroyed upon completion of the study, rendering all data unidentifiable with any specific person. Prior to that, your name will only be used to award your research credits and any Gift Card(s) won.

Regarding the in-person session, there are limits to confidentiality. In their capacity as therapists, researchers in this study are "mandated reporters" of suspected child abuse and elderly abuse. In addition, if the student-therapist has reason to believe that a participant presents a danger to themselves or others, consultation with a supervisor and possibly other authorities must be initiated by the researcher-therapist.

Right to Withdraw
You do not have to take part in this study nor complete it. If you start the study and decide that you do not want to finish, all you have to do is to tell Fernando Alessandri or Dr. Karen Christoff in person, by letter or e-mail, or by telephone. Whether or not you choose to participate or to withdraw will not affect your standing with the Department of Psychology, or with the University, and it will not cause you to lose any benefits to which you are entitled. Research credits will be prorated based on 15-minute intervals spent on the study.

The researchers may terminate your participation in the study without regard to your consent and for any reason, such as protecting your safety and protecting the integrity of the research data. If the researcher terminates your participation, any inducements to participate will be prorated based on the amount of time you spent in the study.

IRB Approval
This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). The IRB has determined that this study fulfills the human research subject protections obligations required by state and federal law and University policies. If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482.

Statement of Consent
I have read the above information. I understand that a printed copy is available if I request it. I have had an opportunity to ask questions, and I have received answers. I consent to participate in this study.

Printed name of participant:

_____
Signature of Participant Date

_____ _____
Signature of Investigator Date

NOTE TO PARTICIPANTS: DO <u>NOT</u> SIGN THIS FORM
IF THE IRB APPROVAL STAMP ON THE FIRST PAGE HAS EXPIRED.

APPENDIX C: RATING SHEET

Participant ID: _____

RATING SHEET FOR RESEARCHER WARMTH AND CLARITY, AND PARTICIPANT ENGAGEMENT

Instructions: As you watch, rate the administrator, participant or both (white boxes):
0 = Not at all/No 1 = Somewhat 2 = Very much/Yes

During the first 5 minutes:

The researcher…	Warmth	Clarity	Reception
Greets the participant with warmth.	0 1 2		
Makes eye contact.	0 1 2		
Warmly asks if the participant is ready.	0 1 2		
Presents the instructions clearly.		0 1 2	
Did the participant understand & engage?			0 1 2

Part 2

The researcher…	Warmth	Clarity	Reception
Warmly asks if the participant is ready.	0 1 2		
Presents the instructions clearly.		0 1 2	
Did the participant understand & engage?			0 1 2

Part 3

The researcher…	Warmth	Clarity	Reception
Warmly asks if the participant is ready.	0 1 2		
Presents the instructions clearly.		0 1 2	
Did the participant understand & engage?			0 1 2
Researcher ends the session with warmth and concern.	0 1 2		

COLUMN TOTALS			

APPENDIX D: ADMINISTRATION CHECKLISTS

What personal code did you enter on the online questionnaire? _____(name of your first pet and the number of siblings you have (ex. Kitty4). If you never had a pet, use a favorite musician plus number of siblings (ex. BeastyBoys8). Today's Date: _____

CHECKLIST FOR GROUP A ADMINISTRATION

Materials: ___Stopwatch _____Tissues _____Consent form _____Community Resources ____2 protocols ___1 pen

√	*The researcher…*
	Greets the participant with warmth. (eye contact)
	Thanks them for coming.
	Asks about needing the bathroom.
	Asks about being OK to stay up to 2 hours.
	Worried about car getting towed or other distractions?
	Says there will be 3 sections and 2 breaks.
	Obtains signed informed consent.
	Warmly asks if the participant is ready.
**	Starts the timer.
	Gives a copy of the instructions.
	Take opening SUDS.
	Reads instructions aloud.
	Responds to questions with warmth & competence.
	Tells them to keep writing, even if the same things.
	@ 7 min: Highest SUDS since last time. Actual time:
	@ 14 min: Highest SUDS since last time. Actual time:
	@ 22 min: Highest SUDS since last time. Actual time:
**	Stops at 30 minutes? **List actual duration:**
	Announces a break.
	Highest SUDS since last time:
	Instruct to disengage, walk, bathroom, call/text.
**	Times the break.
	The break is no less than 4 minutes.
	Warmly asks if the participant is ready.
**	Starts the timer.
	Take opening SUDS.
	Reads instructions aloud again.
	Responds to questions with warmth & competence.
	Tells them to keep writing, even if the same things.
	@ 7 min: Highest SUDS since last time. Actual time:
	@ 14 min: Highest SUDS since last time. Actual time:
	@ 22 min: Highest SUDS since last time. Actual time:
**	Stops at 30 minutes? **List actual duration:**
	Announces a break.
	Highest SUDS since last time:
	Instruct to disengage, walk, bathroom, call/text.
**	Times the break.
	The break is no less than 4 minutes.
	Warmly asks if the participant is ready.
**	Starts the timer.
	Take opening SUDS.
	Reads instructions aloud again.
	Responds to questions with warmth & competence.
	Tells them to keep writing, even if the same things.
	@ 7 min: Highest SUDS since last time. Actual time:
	@ 14 min: Highest SUDS since last time. Actual time:
	@ 22 min: Highest SUDS since last time. Actual time:
**	Stops at 30 minutes? **List actual duration:**
	Highest SUDS since last time:
	Explains/understands the intervention phase is complete & 3 posts must be done online now, at 14 days, and 30 days.
	Warmly assesses current well-being of participant.
	Gives therapy resources form.
Y / N	Should this participant be monitored to ensure safety?

Please describe any other deviations from the protocol, or different metaphors used to explain concepts.

CHECKLIST FOR GROUP B ADMINISTRATION

What personal code did you enter on the online questionnaire? _____(name of your first pet and the number of siblings you have (ex. Kitty4). If you never had a pet, use a favorite musician plus number of siblings (ex. BeastyBoys8). Today's Date: _____

CHECKLIST FOR GROUP B ADMINISTRATION

___Stopwatch ___Tissues___Consent ____Comm.Resources ___2 protocols ___2 pens

		√	*The researcher…*
			Greets the participant with warmth. (eye contact)
			Thanks them for coming.
			Asks about needing the bathroom.
			Asks about being OK to stay up to 2 hours.
			Worried about car getting towed or other distractions?
			Says there will be 3 sections and 2 breaks.
			Obtains signed informed consent.
			Warmly asks if the participant is ready.
			Starts the timer.
			Gives a copy of the packet.
P1 SUDS			Take opening SUDS.
Beg	Hi		Reads page 1 aloud clearly.
			Probes for understanding.
			Asks for the highest SUDS reached on this page.
P2 SUDS			Take opening SUDS. Reads the 2nd page aloud clearly.
Beg	Hi	**	"These tissues are here on purpose. It's normal to get a little runny…"
			After – THERAPIST READS THE CIRCLED EMOTIONS OUT LOUD. Say something like, "Have you ever identified so many different emotions? No wonder this experience has been so difficult."
			Asks for the highest SUDS reached on this page.
P3 SUDS			Take opening SUDS.
Beg	Hi		Reads the 3rd page aloud clearly.
			AFTER – THERAPIST READS THEM ALOUD. "So despite all the negatives, you still found some positives. Had you considered that before?"
			Asks for the highest SUDS reached on page.
P4 SUDS			Take opening SUDS.
Beg	Hi		Reads the 4th page aloud clearly.
			After- Read them ALOUD and say something like, "We'll discuss some of these after the break."
			Asks for the highest SUDS reached on page.
		**	Stops at 30 minutes? **List actual duration:**
			Announces a break.
			Instruct to disengage, walk, bathroom, call/text.
		**	Times the break.
			The break is no less than 4 minutes.
			Warmly asks if the participant is ready.
		**	Starts the timer.
P5 SUDS			Take opening SUDS.
Beg	Hi		Reads the 5th page aloud clearly.
			Make sure it's something specific about the participant ("I" not "they"). It's OK to mention something they wrote in Step 4.

			Asks for the highest SUDS reached on page.
P6 SUDS			Take opening SUDS.
Beg	Hi		Reads the 6th page aloud clearly.
			Try to help them see the guilty person with pity, or at least as no more than children lacking in resources, skills, etc. to meet higher expectations.
			Asks for the highest SUDS reached on page.
P7 SUDS			Take opening SUDS.
Beg	Hi		Reads the 7th page aloud clearly.
			After – Mention that they should practice exposure at home. Give the example of a bridge – escaping to feel comfortable doesn't cure it.
			Asks for the highest SUDS reached on page.
		**	Stops at 30 minutes? **List actual duration:**
			Announces a break.
			Instruct to disengage, walk, bathroom, call/text.
		**	Times the break.
			The break is no less than 4 minutes.
			Warmly asks if the participant is ready.

		**	Starts the timer.
P8 SUDS			Take opening SUDS.
Beg	Hi		Reads the 8th page aloud clearly.
			Clarify that there may be a gap between NOW and FUTURE. Help them to see negative feelings like a puppy at the door, instead of fighting to keep the door closed, let it come in. It will sniff you and probably leave soon.
			Asks for the highest SUDS reached on page.
P9 SUDS			Take opening SUDS.
Beg	Hi		Reads the 9th page aloud clearly.
			Make sure they included emotions and not just events.
			Asks for the highest SUDS reached on page.
P10 SUDS			Take opening SUDS.
Beg	Hi		Reads the 10th page aloud clearly.
			Read their choices aloud. Acknowledge if fewer than before. Asks for the highest SUDS reached on page.
P11 SUDS			Take opening SUDS.
Beg	Hi		Reads the 11th page aloud clearly.
			Read their choices aloud. Acknowledge if more than before. Asks for the highest SUDS reached on page.
P12 SUDS			Take opening SUDS.
Beg	Hi		Reads the 12th page aloud clearly.
			Asks for the highest SUDS reached on page.
		**	Stops at 30 minutes? **List actual duration:**
			Explains/understands the intervention phase is complete & 3 posts must be done online: now, at 14 days, and 30 days.
			Warmly assesses current well-being of participant.
			Gives therapy resources form.
		Y N	Should this participant be monitored to ensure safety?

Please describe any other deviations from the protocol, or different metaphors used to explain concepts.

APPENDIX E: LOCAL THERAPY RESOURCES

The University of Mississippi

Psychological Services Center
G-382 Kinard Hall
University, MS 38677
(662) 915-7385

Campus and Community Resources

Psychological Testing and Assessment:	
Psychological Assessment Clinic, University of Mississippi	**(662) 915-7253**
Matthew Campbell, Ph.D., Licensed Psychologist, Oxford, MS	(662) 513-9936
Susan Lau, Ph.D., Optimum Behavioral Health, Olive Branch, MS	(662) 895-1707
Clyde Sheehan, Psychiatrist, (ADHD only) Sheehan Counseling Center, Tupelo, MS	(662) 844-4364
Vickie R. Brewer, Ph.D., (Neuropsychological testing) LeBonheur Children's Medical Center	(901) 287-5220
Sarah Richie, Ph.D. (Neuropsychological testing) Memphis Neuropsychology, LLC	(901) 737-6677
Counseling/Psychotherapy:	
Psychological Services Center, University of Mississippi	**(662) 915-7385**
University Counseling Center, University of Mississippi	**(662) 915-3784**
Communicare (CMHC), Oxford, MS	(662) 234-7521
Emily Thomas Johnson, Ph.D., (children) Desoto County, MS	(662) 609-4950
Penny Haws, Ph.D., Licensed Psychologist, Oxford, MS	(662) 234-0511
Optimum Behavioral Health, Olive Branch, MS	(662) 895-1707
Save-A-Life of Lafayette County (Pregnancy Test Center / www.OptionLine.org)	(662) 234-4414
Victims of Sexual Assault & Violence, Linda Abbot, 208 Odom Hall	(662) 915-1059
Psychiatric Services (Medication Management):	
John Black, M.D., University Health Services	**(662) 915-7275**
Dr. Erik Richardson/White Oak	(662) 236-1927
Timothy Kelly, M.D., Adult Psychiatry, Behavioral Health, Oxford	(662) 513-1660
Harrison Evans, M.D., Adult Psychiatry, Oxford, MS	(662) 236-5773
Tom Walden, M.D., General Psychiatry, Tupelo, MS	(662) 680-9002
Clyde Sheehan, Psychiatrist, (ADHD only) Sheehan Counseling Center, Tupelo, MS	(662) 844-4364
Randall J. Moskovitz, M.D., General Psychiatry, Memphis, TN	(901) 725-0882
Campus Academic Resources (available to all students):	
University Career Center, 303 Martindale Center	(662) 915-7174
The Jones Language Laboratory, 113 Bishop	(662) 915-7663
University Writing Center	(662) 915-7689
Center for Excellence in Teaching and Learning	(662) 915-1391

Campus Tutoring Services:

1. Free Group Tutoring: each academic department at Ole Miss offers free group tutoring in certain courses. Contact the appropriate academic department for further information or visit http://www.olemiss.edu/depts/cetl/
2. Private Student-Paid Tutoring: students interested in hiring a private tutor for individual subjects should contact the appropriate department to ask about qualified graduate students available as tutors.
3. In addition, you may want to check out the following website that often lists tutors or tutoring sessions for specific courses: www.olemiss.edu/academics/tutors.html
4. Several of the Freshmen dorms offer free group tutoring. Contact your RA for more information.

Community Tutoring Services:	
Cotton Tutoring Service, Oxford, MS (employs professionals, teachers, and Master-level and Doctoral-level students)	(662) 234-2232
Sylvan Learning Center, Tupelo, MS	(662) 844-2121

PAC rev. 12/7/10

APPENDIX F: RECRUITMENT E-MAILS

INVITATION

Dear Student,

Your name came up because on the Sona screener survey you indicated that in the past you witnessed or experienced things that, although fairly common, can be somewhat intrusive and difficult to forget or ignore.

I am a graduate student at Ole Miss and I'm working on a study that is testing two brief ways of helping people become less affected by unpleasant or intrusive memories. They are all based on a series of writing exercises. We are looking for people to participate in this valuable research project.

This study offers up to 4 hours of research credit. It requires filling out questionnaires once online before the in-person session (15-30 minutes each); an in-person session estimated at 100-120 minutes; and three follow-up questionnaires (15-30 minutes each). You will also have two chances to win a $50 gift card to vendors like Target, Amazon, and Starbucks. This study has been reviewed by The University of Mississippi's Institutional Review Board.

If you wish to participate, please e-mail me back so I can send you a link to the first questionnaire and get started. Your participation will be kept completely confidential.

If you are currently in treatment, YOU SHOULD FIRST talk to your therapist about whether or not participation in this study is consistent with your therapy goals.

You can really help young scientists like me to better understand how to provide treatments that work for people. Do you have any questions? If so, e-mail me back or call me at 443-370-2606.

Thank you!
Fernando

Fernando Alessandri, M.A.
Graduate Student, Clinical Psychology
University of Mississippi
falessan@go.olemiss.edu
443-370-2606

E-MAIL IF THEY ANSWER THEY WOULD LIKE TO PARTICIPATE

Dear [Name of Student],

Thank you for agreeing to participate in my study. Below you will find a link to the first questionnaire to get started.

Please notify me when you complete that questionnaire. You will then receive a link so you can schedule your in-person session on Sona.

[Qualtrics link for Time 1]

Thank you again for your interest and participation!

--Fernando

Fernando Alessandri, M.A.
Graduate Student, Clinical Psychology
University of Mississippi
falessan@go.olemiss.edu
443-370-2606

APPENDIX G: PRE- AND POST-ASSESSMENTS

Demographics

INSTRUCTIONS: Please answer as best fits your situation.
What is your biological sex? Male/ Female
What is your age?
What is your height (approximately)?
What is your current weight (approximately)?
Which of these best describes your racial/ethnic background?
Black/African White/Caucasian Latino/Hispanic Native American Multiracial Asian Other
What is your marital status?
Single/Never Married
Single/Living with a Romantic Partner Married
Divorced Widowed
Prefer not to say
Who do you currently live with? (check as many as apply) Alone
Roommates
Romantic partner
Spouse
Parent(s)
My children or step-children Other relative(s)
What is your religious background?
How often do you participate in religious activity (including by yourself such as prayer)?
Daily
2-3 Times a Week
Once a Week
2-3 Times a Month Once a Month
Less than Once a Month Never
What is your sexual orientation?
Rather not say
Not sure
Straight/Heterosexual
LGBT/Homosexual
What year of college are you in? 1st 2nd 3rd 4th 5th Graduate Student
What was your GPA before the start of this semester (rounded off)?
Estimate your current semester GPA (or final GPA if no longer taking classes).
How many bedrooms are in the place you grew up in?
How many bathrooms are in the place you grew up in?
What was the highest level of education your mother (or female guardian) received?
Not applicable
8th Grade
Some High School
High School Degree or GED
Some college
Associate Degree Bachelor's Degree

Master's Degree
Doctoral Degree

What was the highest level of education your father (or male guardian) received?

Not applicable
8th Grade
Some High School
High School Degree or GED
Some college
Associate Degree Bachelor's Degree
Master's Degree
Doctoral Degree

Are you currently working in addition to going to school?

No
No, but looking for work.
Yes, part-time
Yes, full time (40 hours/week)

Are you a member of a fraternity or sorority? Yes No

Health Behaviors

The following questions are about behaviors related to health. As with the entire study, all answers will be confidential.

If employed, in the past 30 days, how many days have you missed work due to illness?

In the past 30 days, how many days have you missed classes due to illness?

In the past 30 days, how many times have you received illness-related services at a health clinic or hospital?

In the past 30 days, how many times have you received services at a counseling or psychological services center?

In the past 30 days, how many times have you consulted with a religious figure about troubling issues in your life?

In the past 14 days, how many times have you journaled or written a blog about troubling issues in your life?

In the past 14 days, how many times have you talked to a friend or family member about troubling issues in your life?

Pennebaker Inventory of Limbic Languidness (PILL)

On the following pages several common symptoms or bodily sensations are listed. Most people have experienced most of them at one time or another. We are currently interested in finding out how prevalent each symptom is among college students. All data will be confidential.
For all items, use the following scale:

A = have never or almost never experienced the symptom
B = less than 3 or 4 times per year
C = every month or so
D = every week or so
E = more than once every week

For example, if your eyes tend to water once every week or two, you would choose D for item #1.

1. Eyes water _____
2. Itching or painful eyes _____
3. Ringing in ears _____
4. Temporary deafness or hard of hearing _____
5. Lump in throat _____
6. Choking sensations _____
7. Sneezing spells _____
8. Running nose _____
9. Congested nose _____
10. Bleeding nose _____
11. Asthma or wheezing _____
12. Coughing _____
13. Out of breath _____
14. Swollen ankles _____
15. Chest pains _____
16. Racing heart _____
17. Cold hands or feet even in hot weather _____
18. Leg cramps _____
19. Insomnia _____
20. Toothaches _____
21. Upset stomach _____
22. Indigestion _____
23. Heartburn _____
24. Severe pains or cramps in stomach _____
25. Diarrhea _____
26. Constipation _____
27. Hemorrhoids _____
28. Swollen joints _____
29. Stiff muscles _____
30. Back pains _____
31. Sensitive or tender skin _____

32. Face flushes _____
33. Severe itching _____
34. Skin breaks out in rash _____
35. Acne or pimples on face _____
36. Acne or pimples other than face _____
37. Boils _____
38. Sweat even in cold weather _____
39. Strong reactions to insect bites _____
40. Headaches _____
41. Sensation of pressure in head _____
42. Hot flashes _____
43. Chills _____
44. Dizziness _____
45. Feel faint _____
46. Numbness or tingling in any part of body _____
47. Twitching of eyelid _____
48. Twitching other than eyelid _____
49. Hands tremble or shake _____
50. Stiff joints _____
51. Sore muscles _____
52. Sore throat _____
53. Sunburn _____
54. Nausea _____

Depression, Anxiety, and Stress Scale-21 Item Version (DASS-21)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past 7 days. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 - Did not apply to me at all - NEVER
1 - Applied to me to some degree, or some of the time - SOMETIMES
2 - Applied to me to a considerable degree, or a good part of time - OFTEN
3 - Applied to me very much, or most of the time - ALMOST ALWAYS

1. I found it hard to wind down	0	1	2	3
2. I was aware of dryness of my mouth	0	1	2	3
3. I couldn't seem to experience any positive feeling at all	0	1	2	3
4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5. I found it difficult to work up the initiative to do things	0	1	2	3
6. I tended to over-react to situations	0	1	2	3
7. I experienced trembling (eg, in the hands)	0	1	2	3
8. I felt that I was using a lot of nervous energy	0	1	2	3
9. I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10. I felt that I had nothing to look forward to	0	1	2	3
11. I found myself getting agitated	0	1	2	3
12. I found it difficult to relax	0	1	2	3
13. I felt down-hearted and blue	0	1	2	3
14. I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15. I felt I was close to panic	0	1	2	3
16. I was unable to become enthusiastic about anything	0	1	2	3
17. I felt I wasn't worth much as a person	0	1	2	3
18. I felt that I was rather touchy	0	1	2	3
19. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20 I felt scared without any good reason	0	1	2	3
21 I felt that life was meaningless	0	1	2	3

Social and Emotional Loneliness Scale for Adults-Short Version (SELSA-S)

Please take a moment to think about your relationships over the last 2 weeks. *Please circle the number that best reflects the degree to which each of the following statements describes your thoughts and feelings.*

	Disagree Strongly						**Agree Strongly**
1. I feel alone when I am with my family.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2. I feel part of a group of friends.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3. I have a romantic partner with whom I share my most intimate thoughts and feelings.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4. There is no one in my family I can depend on for support and encouragement, but I wish there was.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5. My friends understand my motives and reasoning.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. I have a romantic or marital partner who gives me the support and encouragement I need.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7. I don't have any friends who share my views, but I wish I did.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8. I feet close to my family.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9. I am able to depend on my friends for help.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10. I wish I had a more satisfying romantic relationship.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11. I feet part of my family.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12. My family really cares about me.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13. I do not have any friends who understand me, but I wish I did.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14. I have a romantic partner to whose happiness I contribute.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15. I have an unmet need for a close romantic relationship.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Ruminative Response Scale (RRS)

People think and do many different things when they feel depressed. Please read each of the items below and indicate whether you almost never (1), sometimes (2), often (3), or almost always (4) think or do each one WHEN YOU FEEL DOWN, SAD, OR DEPRESSED.

Please indicate what you *generally* do, not what you *think* you should do.

1. Think about how alone you feel	1	2	3	4
2. Think "I won't be able to do my job if I don't snap out of this."	1	2	3	4
3. Think about your feelings of fatigue and achiness	1	2	3	4
4. Think about how hard it is to concentrate	1	2	3	4
5. Think "What am I doing to deserve this?"	1	2	3	4
6. Think about how passive and unmotivated you feel	1	2	3	4
7. Analyze recent events to try to understand why you are depressed	1	2	3	4
8. Think about how you don't seem to feel anything anymore	1	2	3	4
9. Think "Why can't I get going?"	1	2	3	4
10. Think "Why do I always react this way?"	1	2	3	4
11. Go away by yourself and think about why you feel this way	1	2	3	4
12. Write down what you are thinking and analyze it	1	2	3	4
13. Think about a recent situation, wishing it had gone better	1	2	3	4
14. Think "I won't be able to concentrate if I keep feeling this way."	1	2	3	4
15. Think "Why do I have problems other people don't have?"	1	2	3	4
16. Think "Why can't I handle things better?"	1	2	3	4
17. Think about how sad you feel	1	2	3	4
18. Think about all your shortcomings, failings, faults, mistakes	1	2	3	4
19. Think about how you don't feel up to doing anything	1	2	3	4
20. Analyze your personality to try to understand why you are depressed	1	2	3	4
21. Go someplace alone to think about your feelings	1	2	3	4
22. Think about how angry you are with yourself	1	2	3	4

White Bear Suppression Inventory (WBSI)

This survey is about thoughts. There are no right or wrong answers, so please respond honestly to each of the items below. Be sure to answer every item by circling the appropriate letter beside each.

A = Strongly disagree
B = Disagree
C = Neutral or don't know
D = Agree
E = Strongly agree

	A	B	C	D	E
1. There are things I prefer not to think about.					
2. Sometimes I wonder why I have the thoughts I do.					
3. I have thoughts that I cannot stop.					
4. There are images that come to mind that I cannot erase.					
5. My thoughts frequently return to one idea.					
6. I wish I could stop thinking of certain things.					
7. Sometimes my mind races so fast I wish I could stop it.					
8. I always try to put problems out of mind.					
9. There are thoughts that keep jumping into my head.					
10. There are things that I try not to think about.					
11. Sometimes I really wish I could stop thinking.					
12. I often do things to distract myself from my thoughts.					
13. I have thoughts that I try to avoid.					
14. There are many thoughts that I have that I don't tell anyone.					
15. Sometimes I stay busy just to keep thoughts from intruding on my mind.					

Toronto Alexitymia Scale (TAS-20)

1 = Strongly disagree
2 = Disagree
3 = Neither Disagree or Agree
4 = Agree
5 = Strongly agree

	1	2	3	4	5
1. I am often confused about what emotion I am feeling.					
2. It is difficult for me to find the right words for my feelings.					
3. I have physical sensations that even doctors don't understand.					
4. I am able to describe my feelings easily					
5. I prefer to analyze problems rather than just describe them.					
6. When I am upset, I don't know if I am sad, frightened, or angry.					
7. I find it hard to describe how I feel about people.					
8. I prefer to just let things happen rather than to understand why they turned out that way.					
9. I have feelings that I can't quite identify.					
10. Being in touch with emotions is essential.					
11. I am often puzzled by sensations in my body.					
12. People tell me to describe my feelings more.					
13. I don't know what's going on inside me.					
14. I often don't know why I am angry.					
15. I prefer talking to people about their daily activities rather than their feelings.					
16. I prefer to watch "light" entertainment shows rather than psychological dramas.					
17. It is difficult for me to reveal my innermost feelings, even to close friends.					
18. I can feel close to someone, even in moments of silence.					
19. I find examination of my feelings useful in solving personal problems.					
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.					

Cognitive Processing of Trauma Scale (CPOTS)

Regarding your most disturbing/traumatic experience, please rate the extent to which you agree with each of the following statements using the following rating scale.

1 strongly disagree
2 moderately diasagree
3 slightly disagree
4 neither mainly agree nor disagree
5 slightly agree
6 moderately agree
7 strongly agree

1	2	3	4	5	6	7	1. There is ultimately more good than bad in this experience.
1	2	3	4	5	6	7	2. I have figured out how to cope.
1	2	3	4	5	6	7	3. I say to myself 'this isn't real.'
1	2	3	4	5	6	7	4. I have moved on and left this event in the past.
1	2	3	4	5	6	7	5. Overall, this event feels resolved for me.
1	2	3	4	5	6	7	6. I have come to terms with this experience.
1	2	3	4	5	6	7	7. I often think, 'if only I had done something different.'
1	2	3	4	5	6	7	8. I blame myself for what happened.
1	2	3	4	5	6	7	9. I refuse to believe that this really happened to me.
1	2	3	4	5	6	7	10. I wish I could have handled this differently.
1	2	3	4	5	6	7	11. Other people have had worse experiences than mine.
1	2	3	4	5	6	7	12. I act as if this event never really happened.
1	2	3	4	5	6	7	13. Even though my experience was difficult, I can think of ways that it could have been worse.
1	2	3	4	5	6	7	14. My situation is not so bad compared to other peoples' situations.
1	2	3	4	5	6	7	15. I am able to find positive aspects of this experience.
1	2	3	4	5	6	7	16. I have been able to find a 'silver lining' in this event.
1	2	3	4	5	6	7	17. I pretend this didn't really happen.

Modified PTSD Symptom Scale–Self Report (MPSS-SR)

The purpose of this scale is to measure the frequency and severity of symptoms in the past two weeks. For each symptom listed below, please write the frequency of the symptom to the left (0 – 3), and if the frequency is at least 1, circle the number to the right to indicate the severity.

FREQUENCY

0 Not at all
1 Once per week or less/ a little bit/once in a while
2 2 or 4 times per week/ somewhat/half the time
3 5 or more times per week/ very much/almost always

SEVERITY

0 Not at all distressing
1 A little bit distressing
2 Moderately distressing
3 Quite a bit distressing
4 Extremely distressing

FREQUENCY				Regarding the most disturbing event in your life, in the past 30 days…	SEVERITY				
0	1	2	3	1. Have you had recurrent or intrusive / distressing thoughts or recollections about the event?	0	1	2	3	4
0	1	2	3	2. Have you been having recurrent bad dreams or nightmares about the event?	0	1	2	3	4
0	1	2	3	3. Have you had the experience of suddenly reliving the event, flashbacks of it, acting or feeling as it were re-occurring?	0	1	2	3	4
0	1	2	3	4. Have you been intensely EMOTIONALLY upset when reminded of the event (includes anniversary reactions)?	0	1	2	3	4
0	1	2	3	5. Have you been having intense PHYSICAL reactions (e.g., sweaty, heart palpitations) when reminded of the event?	0	1	2	3	4
0	1	2	3	6. Have you persistently been making efforts to avoid thoughts or feelings associated with the event?	0	1	2	3	4
0	1	2	3	7. Have you persistently been making efforts to avoid activities, situations, or places that remind you of the event?	0	1	2	3	4
0	1	2	3	8. Are there any important aspects about the event that you still cannot recall?	0	1	2	3	4
0	1	2	3	9. Have you markedly lost interest in free time activities since the event?	0	1	2	3	4
0	1	2	3	10. Have you felt detached or cut off from others around you since the event?	0	1	2	3	4
0	1	2	3	11. Have you felt that your ability to experience emotions is less (e.g., unable to have loving feelings, do you feel numb, can't cry when sad, etc.)?	0	1	2	3	4
0	1	2	3	12. Have you felt that any future plans or hopes have changed because of the event (e.g., no career, marriage, children, or long life)?	0	1	2	3	4
0	1	2	3	13. Have you been having persistent difficulty falling or staying asleep?	0	1	2	3	4
0	1	2	3	14. Have you been continuously irritable or having outbursts of anger?	0	1	2	3	4
0	1	2	3	15. Have you been having persistent difficulty concentrating?	0	1	2	3	4
0	1	2	3	16. Are you overly alert (e.g., check to see who is around, etc.) since the event?	0	1	2	3	4
0	1	2	3	17. Have you been jumpier, more easily startled, since the event?	0	1	2	3	4

Have the symptoms above significantly affected an important part of your life, such as your relationships with other people, your work or your ability to work, your school work, etc.?

YES NO

Have you ever received treatment or counseling for these symptoms?

YES NO

If NO, and you experienced some of the symptoms described above, please give some reasons you might have for not seeking treatment: _____

_____

Covariates - disclosures to others and recent occurrences of trauma

How many years and months has it been since the event took place (or stopped taking place)?

How many times have you EVER talked to each of these people about your most disturbing/traumatic experience?

Family member

Friend

Acquaintance

Religious Leader Counselor/Therapist

Someone else

Written about it in a journal, blog, etc.

Have you experienced any additional disturbing/traumatic events since you began participation in this study?

No

Yes. Please indicate the kind of event that occurred.

VITA

FERNANDO T. ALESSANDRI

EDUCATION

University of Mississippi, Oxford, MS
Doctoral Candidate, Clinical Psychology (M.A. August, 2013; Ph.D. anticipated May 2016). GPA: 3.85
Doctoral dissertation: *Testing a Brief Directive Intervention to Reduce Symptoms Associated with Trauma.*
Status: Defended May, 2015.
Committee: Karen A. Christoff, Thomas W. Lombardo, Todd A. Smitherman, Erin Holmes.
Master's thesis: *Assessing Associations Among Interpersonal Closeness, Fear of Intimacy, Secure Attachment, and a Maternally Warm Rearing Style*. Committee: Karen A. Christoff, John Young, Marilyn Mendolia.

Institute for the Psychological Sciences, Arlington, VA
M.S., Clinical Psychology, May 2011. GPA: 3.94
Student Leadership Award, Class of 2011
Admissions and Marketing Assistantship

University of Southern California, Los Angeles, CA
M.F.A., Film & Television Production, May 2002. GPA: 3.70
Teaching Assistant
Scholarships: National Hispanic Foundation for the Arts and Institute for the Humane Studies.
Launched and ran a summer film camp for middle school students for three summers.

University of Notre Dame, South Bend, IN
B.A., Government (Politics, Philosophy & Economics concentration), May 1991. GPA: 3.48
Ideas & Issues, Co-Chair ($30K budget to bring speakers to campus)
Anthropos, Founder (philosophical discussion group)

CERTIFICATIONS/LICENSURE

Examination for Professional Practice of Psychology (EPPP)
Texas State Board of Examiners of Psychologists, Passed at Doctoral Level, September 2013

Provisionally Certified Mental Health Therapist (#2854)
State of Mississippi Department of Mental Health

CLINICAL EXPERIENCE

Veteran's Administration Pacific Islands Health Care System, Honolulu, HI
Predoctoral Intern, June 2015-June 2016
Supervisors: Alycia Barlow, Ph.D., Behavioral Health Interdisciplinary Program
Marianne Freeman, Ph.D., Rural Health Track
Co-lead a weekly DBT skills group and a weekly drop-in mindfulness group.
Provide evidence-based individual therapy for Veterans dealing with anxiety and mood disorders.

Provide individual and family therapy via VA teleconferencing technology to Veterans in Guam and Saipan.
Participate in weekly interdisciplinary team meetings and didactics.
Conducting a secondary analysis study based on data from a recently completed RCT comparing CPT delivered in two modalities (in-person and by video-teleconference). Investigating predictors of patient dropout.

Veteran's Administration San Diego Healthcare System, La Jolla, CA
Psychology Trainee, July 2014-June 2015
Supervisors: Carolyn Allard, Ph.D., Military Sexual/Interpersonal Trauma Clinic
Caitlin Ferriter, Ph.D., Behavioral Health Interdisciplinary Program
Provide individual and group therapy for Veterans dealing with PTSD, mood disorders, and interpersonal difficulties.
Implement training and receive supervision in evidenced-based interventions such as Prolonged Exposure and Cognitive Processing Therapy for PTSD, and "third wave" CBTs for anxiety and mood disorders.
Attend weekly seminars on PTSD and evidence-based practices & case conceptualization.
Participate in weekly interdisciplinary team meetings in both clinics.

Baptist Children's Village, Water Valley, MS
Consultant/Therapist, August 2013-June 2014
Supervisors: Alan Gross, Ph.D., Randy Cotton, Ph.D.
Provided treatment planning and therapy for residents ages 4-19.
Led parent-child communication training and staff training seminars.

Psychological Services Center, University of Mississippi
Graduate Therapist, May 2012-June 2014
Supervisors: Karen A. Christoff, Ph.D., Scott Gustafson, Ph.D., Alan Gross, Ph.D.
Conducted intake interviews and provided evidence-based therapies for individuals with anxiety and mood disorders, and behavioral couples therapy.
Prepared client notes and attended weekly supervision meetings.
Sought additional training experiences with John Young, Ph.D. (parent training, child assessment, and motivational interviewing); Kelly G. Wilson , Ph.D. (Acceptance and Commitment Therapy); and Todd Smitherman, Ph.D. (anxiety disorders and behavioral medicine applications).

Delta Autumn Consulting, LLC, Oxford, MS
Psychometrist, Fall 2013-June 2014
Supervisor: John Young, Ph.D.
Performed assessments of intellectual and behavioral functioning and achievement of children in English and Spanish.
Wrote 8 integrated reports.
Presented findings and recommendations at school IEP meetings.

North Mississippi Regional Center, Oxford, MS
Client Assistant, Fall 2013
Supervisor: Scott Bethay, Ph.D.
Worked with an individual with severe intellectual disability for 1 hour per week.

Region IV Crisis Stabilization Unit, Tupelo, MS
Psychology Trainee, August 2012-July 2013
Supervisors: Scott Gustafson, Ph.D. (overall), John Baker, M.A. (on-site).
Conducted intake interviews and provided group and individual therapy to individuals court-ordered to the center for assessment and stabilization. Situations involved potential harm to self or others; drug/alcohol detoxification; stabilization on psychotropic, anxiety, and mood medications; and lack of coping skills related to anger, depression, and anxiety. Treated more than 250 unique clients.

RESEARCH EXPERIENCE

Get Fit! Research Lab
Researcher, August 2011- Present
Supervisor: Karen A. Christoff, Ph.D.
Designed a brief directive intervention for trauma. Pilot tested it with 5 participants and am currently conducting an RCT comparing it to an expressive writing protocol in the reduction of trauma symptoms.
Designed a survey study, and collected and analyzed data related to parenting styles, emotion regulation, communication skills, and social functioning.
Supported peer projects related to childhood obesity, religious coping, body image concerns, and a treatment intervention based on video self-monitoring.

SITH Lab (Scientific Infusion that Helps)
Research Assistant, 2011-2012
Supervisor: John Young, Ph.D.
Assisted with several thesis and doctoral projects involving PTSD and dissemination of EBTs.
Helped with the translation and back-translation of a Spanish version of the Child PTSD Symptom Scale.

University of Mississippi Clinical Disaster Research Collaborative (UM-CDRC)
Research Assistant, Gulf Oil Spill Grant Program, January through June, 2012
Supervisor: Stefan Schulenberg, Ph.D.
Performed data entry and basic statistical analysis for quarterly and final reports to sites funded by the grant as well as the Mississippi Department of Mental Health.

Community Assessment for Public Health Emergency Response (CASPER)
Data Collector, October 2011
Surveyed residents in Gulf Coast neighborhoods for physical and mental health symptoms as part of a project by the Centers for Disease Control and Prevention, National Center for Environmental Health, Division of Environmental Hazards and Health Effects.

DISSEMINATION & ACADEMIC ACTIVITIES

Alessandri, F. T., Magee, L., Schultz, K. V., & Christoff, K. A. (in preparation). *Lack of emotional clarity predicts loneliness, moderated by degree of peer closeness experienced*.

Alessandri, F. T., Weathers, L., Lombardo, T. W., & Christoff, K. A. (2014, November). *Preliminary Results from an RCT Comparing a Brief Directive Therapy Protocol with Expressive Writing for the Reduction of PTSD Symptoms.* Poster presentation at the annual conference of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.

Alessandri, F. T., Schultz, K. V., & Christoff, K. A. (2014, November). *Relationships Between Parental Rearing and Emotional Regulation in Adult Men and Women.* Poster presentation at the annual conference of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.

Alessandri, F. T., Magee, L., Schultz, K. V., & Christoff, K. A. (2014, November). *How Do Interpersonally Secure, Fearful, Preoccupied, and Dismissing Young Adults Differ on Their Reports of Loneliness, Social Interaction, and Parental Rearing Styles?* Poster presentation at the annual conference of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.

Magee, L., Alessandri, F. T., Christoff, K. A. (2014, November). *Health Behaviors in College Students: Does Religion Play a Role?* Poster presentation at the annual conference of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.

Alessandri, F. T., & Christoff, K. A. (2014, April). *Results from Pilot Testing a Brief Directive Intervention for Trauma*. Poster presentation at the University of Mississippi Conference on Psychological Science, Oxford, MS.

Alessandri, F. T., & Christoff, K. A. (2013, November). *Facility for Making and Receiving Self-Disclosures Mediates the Relationship Between Maternal Warmth and Closeness to Others*. Poster presentation at the annual conference of the Association for Behavioral and Cognitive Therapies, Nashville, TN.

Alessandri, F. T. (2012, September). *Psychometric Review of the Social and Emotional Loneliness Scale for Adults (SELSA) and the Short Form (SELSA-S)*. Poster presentation at the annual conference of the Mississippi Psychological Association, Gulfport, MS.

Edited three chapters in Sattler, J. M. (2014). *Foundations of Behavioral, Social, and Clinical Assessment of Children, Sixth Edition*. Jerome M. Sattler, Publisher.

Blind reviews of several articles under consideration by peer-reviewed journals.

ADDITIONAL TRAINING & ACTIVITIES

3-Day ACT Workshop, July 2015, Tripler Army Medical Center, Honolulu, HI.
3-Day Cognitive Processing Therapy Training, October 2014, Naval Medical Center, San Diego.
1-Day Motivational Interviewing Workshop, September 2014, San Diego VA
Red Cross Disaster Response Training, April 2012, Oxford, MS
2-day ACT Workshop led by co-founder Kelly Wilson, Ph.D., July 2012, Washington D.C.
Student Member, Association for Behavioral and Cognitive Therapies (ABCT)
Student Member, Trauma/PTSD SIG of ABCT
Student Member, Association for Contextual Behavior Science (ACBS)
Student Affiliate, American Psychological Association (APA)

TEACHING EXPERIENCE

University of Mississippi, Oxford, MS
Graduate Assistant, Fall 2011, Spring 2012
Supervisor: Karen A. Christoff, Ph.D.
Oversaw undergraduate tutors in the administration of a self-paced introductory psychology course.
Prepared and administered class and testing materials, managed a grades database, tutored students.

Fortis College, New Carrollton, MD
Psychology Instructor, Summer 2011
Taught two introductory psychology courses.

American University, Washington D.C.
Adjunct Faculty, 2009-2010
Writing for Visual Media (Fall 2009, 2010).
Scripting the Short Film (Summer 2009, 2010).
Screenwriting course for high school students (Summer 2009).

John Paul the Great Catholic University, San Diego, CA
Adjunct Professor, 2007
Media Product Development (Spring 2007).

VOLUNTEER EXPERIENCE

Tilden Study Center, Los Angeles, CA
Assistant Director, April 1994-March 2008
Co-founded **The Ahead Leadership Program**; recruited and trained successful college students and young professional men to serve as mentors for high school boys from the Los Angeles and Ventura area; program met biweekly and integrated boys from all SES levels, promoting ambition, achievement, and a spirit of service among all participants; graduates have gone on to college and vocational schools.
Helped run workshops and summer camps for males ranging from fifth grade through high school, college, young professionals, and older men.

Founded and ran the One-On-One Tutoring Program at McKinley Elementary School in Santa Monica, CA; recruited students from UCLA to provide weekly tutoring to disadvantaged youth, mostly Latino; developed similar program at Resurrection School in East Los Angeles.

Riverside Center, New York, NY
Youth Leader, August 1991-May 1993
Assisted with college prep programs for high school boys.
Led camping and ski trips, and academic study weekends.
Taught Sunday School classes at St. Charles Church in the Bronx.

OTHER WORK EXPERIENCE

Hero Pictures, Los Angeles, CA
Vice President of Development, January 2007-December 2008
Oversaw the review, purchase, and improvement of literary properties (books, screenplays, articles) for development as motion pictures and television shows; consulted with producers, agents, lawyers, and reviewed/drafted contracts; produced and edited a TV reality show pilot and promotional materials. Supervised 2 assistants and various interns.

Once Upon A Time Films, Los Angeles, CA
Associate Producer, 2005-2006
Played a lead role in the writing, production, and delivery of the film, *Fighting the Odds: The Marilyn Gambrell Story* for Lifetime Television.
Manager of Development, 2004-2005
Assistant to Stanley M. Brooks, 2003-2004
Supported the development and production of 16 made-for-TV movies and mini-series including *Broken Trail* starring Robert Duvall and Thomas Hayden Church.

Bernard Hodes Group, Los Angeles, CA
Copywriter, October 1995-December 1998
Wrote copy for internet, radio, and print advertising and collateral.
Helped win new business (Hewlett Packard, Honda, Disney).
Won a diversity award for a Honda ad.